

# Apple2000

THE NATIONAL APPLE USERS GROUP



AUGUST 1987

VOLUME 2 (4)





# The hard disk you put in your pocket



## MacEurope's MegaDrive

Jasmine announce the first successful, reliable, affordable combination of hard disk speed and the endless expansion and security of a removable floppy.

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# MegaDrive from MacEurope

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**August 1987**

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# Editorial

## Quality not Quantity !

The summer issue of your magazine is slightly thinner than normal but still contains a wide range of topics. We have sliced a few pages off so that we can try and get the publication date back to its normal date - the first week of the month.

I thought that the job of putting a sixty four page magazine would be easier than the normal eighty pages but this has proved to be unfounded - it still takes a lot of time.

In this issue you will find two new series starting - the first is on languages and the second on Simulation games. The authors are new to the magazine and I welcome them both - well Tom Wright is not that new but it is a change from his normal Local Group Column.

Trusty old Dougal Hendry has written part two of his piece on Serial Interfacing and this makes good reading especially if you know nothing about the hardware side.

We have a major article explaining the Macintosh II internals and also have some inspiring stuff in the last of the 'Lets Rip open the Mac' series.

The usual crop of reviews appear from both the II section and the now renamed 'Macintosh2000' section. Hopefully you find them unbiased and useful when selecting from the vast array of software now available.

Since the last issue I have had to train some new Macintosh DTP users in my own 'firm'. The number of systems that are coming to light in some obscure areas is amazing.

Our organisation has taken on a DTP system and before it had been installed a month were looking to expand it to cope with the extra work the Mac has produced. Amazingly the door was never closed - members of staff kept popping in and saying 'can you do this for me ?' Needless to say the answer was 'yes' but when ?

The standard of presentation in our organisation has doubled and when time allows a system will have to be implemented to ensure fair use of the already overworked Mac.

Right I had better get back on track, so your magazine is slightly smaller but we have made some changes to keep the quality up. Much of this issue has been set using a Beta version of PageMaker 2 and I am pleased to say that it has not fallen over once. You should see the real version 2.0 out by the time you read this, the improvements were really worth waiting for. Also a font change has taken place to make the text more readable!

The editorial team is still finding difficulties in making the magazine as representative as it should be and we therefore still need input from you the membership. It would be nice to hear from some of you - maybe you have found a new use for software or have a novel application that would interest others. Whatever it is please send it in - if you are worried about your writing style - DON'T - we have ways of making it pure poetry !

While I am after some input we could do with some graphics - anything MacPaint - Illustrator or plain old hand drawn, anything that has relevance will do - how about some icons for the various sections - Apple II - Macintosh - Club News - Editorial - education - Reviews - Games - Spreadsheet - DTP - WP and the list goes on. Anything is gratefully received and acknowledged.

The next few months look busy with the PCW Show in September, the DTP Show in October and the Mac User Show in November. We will be at PCW and hopefully at Mac User so you must look us up.

I am not that happy with some of the timings of these annual shows - the Mac User Show held mid-week precludes visitors from the Midlands and the North because of the time, distance and the amount of lost work attendees would suffer. I hope that in future, the planning of such events take into account those that live outside the Home Counties. 🍏

*Jim Panks*

*Jim Panks*

# Comment

## Prices - Support - Prices

The marketing men will tell you that the British Marketplace will stand substantially higher prices than elsewhere in the world. And if you have ever compared prices you will see that many companies take advantage of this situation - sometimes to the extreme.

The Apple User has been at the forefront of this policy for almost a decade now - the Apple II was overpriced for longer - the software acquired a 60-200% increase on the US price and still this trend goes on. I at first thought that it was greed but have now changed my opinion and would call it 'fraud' - we pay more for less - most products from the States and exported has less value - the reason is that here in the good old U.K. we do not get the same value in support. Phone Microsoft or any of the other major U.S. Software houses with offices in the U.K. If they answer, you will be given a straight 'I dont know' or you will get the company shuffle, yes you know, the pass the buck, so and so will know.

A glimmer of hope is on the horizon - firstly SuperMac Technologies have opened up in the UK and are setting up a massive supportware department - the second is with small mail-order houses selling software direct at almost U.S. rates - and there are the reasonable distributors like MacEurope and Heyden who are playing as fair as they can.

So my comment is that the membership should show support to the reasonable members of the trade - the ones that support users and do not just care about the profit side - I am not advocating buying CHEAP - I am advocating FAIRNESS in PRICING with reasonable SUPPORT. Why rip off users now - you may need them in a few years and people that have been ripped off remember.

Do you have a comment that represents the USERS point or are you a member of the TRADE who would like to reply - if so please take an opportunity to air your views - write to the editor now. 🍏



# Local Group News

## Tom Wright updates the local group scene and gives some useful tips.

So there I was a few weeks back wondering how long it would take us to reach 30 in our listing of local groups/clubs. In the last issue we actually reported 27 group contacts with the introduction of the **Crewe Computer Users Club** and the **Essex Mac Group**; this issue apart from correcting the title of the **Essex Mac Group** to **South East Essex Mac Group**. I also have to correct a misunderstanding about the **Apple II Programmers Club**.

Philip Dixon, who started the **Apple II Programmers Club**, has corrected my error by pointing out that the club is still running as a newsletter based club which does not hold meetings. **A2PC** is intended to provide a forum for programmers throughout the country not just within Northumbria, and the club is progressing very well to date.

**North East Apple User Group** is actually the group that I have previously reported as **A2PC** and is a separate organization (although Philip is also largely responsible for the appearance of this group as well).

The **North East Apple User Group** is a Local Group holding regular meetings and is now included in the list of contacts under the correct title. At the North East Groups last meeting an enjoyable evening included a Comms demonstration covering software, hardware and BB's, and a partially successful exercise in communicating between a IIGS and a Mac SE (anybody able to offer help or advice regarding suitable software please contact Philip). **NOTE FOR PHILIP**, if your telephone number is likely to change please let me know.

Correction of my error actually brings the contact list to 28, so we are nearly there, come on folks, get the bloodhounds out and let's find a few more.

The **South East Essex Mac User Group** was formed on 28th July, 1986 and already has about 20 members. Apart from providing the

venue for the groups meetings **D.P.S** are very supportive of the group and have provided valuable help which is much appreciated.

**D.P.S** are Mac dealers as well as being software developers. In addition to the groups formal monthly meetings informal evenings in members houses are common on Sundays.

This group has provided me with my first opportunity to offer my congratulations and best wishes for a non-Apple event. Mick Foy will be getting married at the end of July and I have no doubt that his future wife will be delighted when she fully understands what is involved in marriage to Mick and his Mac!

For a change this month a few observations on group related topics instead of meeting news. Recently while reading an American magazine I came across the following statement:

"I head straight to the software reviews in the local group's newsletter every month. Their insights help me to understand what software has captured the group's leading-edge interest - and why. This information has helped me make the right marketing decisions on a number of occasions, and helps my salespeople know the features and benefits that customers are going for."

The statement was made by an American dealer. Why is he babbling on about that? Well folks the moral of the tale is that newsletters are not only essential to the long term well being of your groups, they can also obviously help to improve your groups standing in the minds of dealers. You can in fact develop a useful system of mutual help with many dealers by helping them to understand that there is a market for products within your group and what is likely to be attractive to users within their area. Where's the mutuality in that?

A number of dealers are already

offering various assistance to some groups including venues for meetings, product demonstrations, ideas for potential guest speakers, etc. If you can make your dealer aware that your group is effectively an unpaid 'after-sales' facility for them you may even find that they will be willing to help by loaning equipment for an evening, provide some access to their duplicating facilities, etc.

Why not offer to run an advertisement for them in your newsletter? Might sound a bit ambitious but several groups now have large membership rosters which are big enough to interest local dealers. The only things to remember when approaching your local dealer are that however well disposed they may be to your group, they earn their living by selling Apple products and they are always understandably looking for a pay-off; the other thing is that some dealers see user groups as always wanting something for nothing. So be prepared to work at the relationship.

What about the groups that don't produce a newsletter? Well as I have said in the past start one. Some groups have operated for years without a newsletter but in general the vigorous groups which achieve long term development are those producing newsletters. The newsletters do not have to be very large and the content can be what you make it, the main point with them is that they provide an additional point of contact for group members, keep the group in members minds, and ensure that meeting dates are not forgotten.

The amount of work involved in producing them is really dependent on what you want to put into them, but can also be influenced by mundane things such as the typing proficiency of the person producing them. Newsletters are also sometimes a useful vehicle for getting shy people to pass on their knowledge in writing when they would never dream of getting up and speaking in front of a group of people.

If any group is thinking of starting a newsletter let me know and I can provide samples of some produced by various groups. If you need help with the first issue I'll see what I can do.

I see that it is now heading for 2am again so I had better get this lot off to the editor before he gets militant again. Wonder if we will see 30 groups on the list by the next issue.

Bye for now.





#### APPLE II PROGRAMMERS CLUB

CONTACT Philip Dixon (0442) 441111  
MEETS Operates through newsletter published quarterly.

#### BENTWATERS APPLE USER GROUP

CONTACT John Thomas (01223) 241010  
VENUE R.A.F. Woodbridge  
MEETS 7.00pm 1st Tuesday of each month

#### BRISTOL GROUP (B.A.U.D.)

CONTACT Mike Farmer (0225) 451111  
VENUE Bristol Maternity Hospital (may change)  
MEETS 7th of each month, or nearest Friday

#### CAMBRIDGE APPLE USERS GROUP

CONTACT Ian Archibald (0223) 411111  
VENUE Isons Cycles, 72 Chesterton Road, Cambridge  
MEETS Fortnightly

#### CREWE COMPUTER USERS CLUB

CONTACT Paul Edmonds (0225) 411111  
VENUE Christ Church Hall, Crewe.  
MEETS Fortnightly, Fridays, 7.30pm to 10.00pm

#### CROYDON APPLE USER GROUP

CONTACT Graham Attwood (0181) 481222  
VENUE 515 Umpfield Road, Warmingham, Surrey  
MEETS 7.30pm - 3rd Thursday of every month

#### EAST MIDLANDS MAC USER GROUP

CONTACT Nick Helm (0202) 221111  
VENUE Wilford Cricket & Rugby Club, Nottingham  
MEETS 8.00pm - 1st & 3rd Wednesday of month

#### EDINBURGH GROUP

CONTACT Adam Gillinsky (031) 551111  
VENUE Proteus Micro Systems, 55 Frederick Street, Edinburgh  
MEETS Monthly - check with Adam

#### ESSEX GROUP

CONTACT Pat Bermingham (0224) 411111  
VENUE The Y.M.C.A., Victoria Road, Chelmsford  
MEETS 3rd Friday of every month

#### FURNESS AREA

CONTACT Alan Curtiss (0225) 411111  
There is new activity in this group. Contact Alan.

#### GATEWAY COMPUTER CLUB

CONTACT Robert Hall (0442) 411111  
VENUE Bob Hope Recreation Centre, R.A.F. Mildenhall  
MEETS Variable - check with Bob

#### GLASGOW GROUP

CONTACT Donald Davidson (041) 411111  
VENUE Proteus Micro Systems, 17 Park Circus Place, Glasgow  
MEETS Quarterly - check with Donald

#### HANTS & BERKS

CONTACT Mike Hollyfield (0753) 411111  
VENUE T.V.S., 128 High Street, Maidenhead  
MEETS 7.00pm - 2nd Monday of each month

#### HARROGATE AREA

CONTACT Peter Sutton (0423) 411111  
No active group in this area. There are a number of keen Apple users in contact with each other.

#### HERTS & BEDS GROUP

CONTACT Norah Arnold (0494) 411111  
VENUE The Old School, 1 Branch Road, Park Street, St. Albans, Herts  
MEETS 8.00pm on 1st Tuesday of each month

#### KENT GROUP

CONTACT Richard Daniels (0333) 411111  
VENUE Microspot, 5-11 London Road, Maidstone  
MEETS 7.30pm on last Monday of month

#### LEICESTER GROUP

CONTACT Bob Bawn (0533) 411111  
VENUE Shakespeare Pub, Braunstone Lane, Leicester  
MEETS 7.30pm - 1st Wednesday of each month

#### LIVERPOOL GROUP

CONTACT Irene Flaxman (0151) 411111  
VENUE Check with Irene  
MEETS 2nd Monday of each month

#### LONDON APPLE COMPUTER CLUB

CONTACT Chris Williams (01) 411111  
VENUE Studio 8, Wharfedale Projects, 47, Wharfedale Road, London, N1 9SE  
MEETS 1st Wednesday of month, 6.00pm

#### LONDON MACINTOSH GROUP

CONTACT Maureen de Saxe (01) 411111  
VENUE Room 683, London University Institute of Education, Bedford Way, London WC1  
MEETS 6.00pm on 2nd Tuesday of each month

#### MACINTOSH USERS GROUP (CAMBRIDGE)

CONTACT Patrick Winterson (0223) 411111  
VENUE Cambridge area - check with Patrick  
MEETS Every 3 months - check with Patrick

#### MIDAPPLE

CONTACT Tom Wright (0222) 411111  
VENUE I.T.E.C., Tildasley Street, West Bromwich  
MEETS 7.00pm on 2nd Friday of each month

#### THE MIDLAND MAC GROUP

CONTACT Ivan Knesovich (0222) 411111  
VENUE Spring Grove House, Safari Park, Bewdley  
MEETS 7.00pm on 1st Tuesday of each month

#### NORTH EAST APPLE USER GROUP

CONTACT Philip Dixon (0434) 411111  
VENUE AppleCentre North East, Ponteland Road, Ponteland, Newcastle-upon-Tyne  
MEETS 1st Wednesday every month

#### THE NORTH WEST APPLE COMPUTER CLUB

CONTACT Jim Roscoe (0925) 411111  
VENUE Horse & Jackey Pub, Winwick Road, Warrington  
MEETS 1st Monday of each month

#### THE NORTH WEST APPLE USERS GROUP

CONTACT Max Parrot (061) 411111  
VENUE Staff House (2nd floor), U.M.I.S.T., P.O. Box 88, Sackville Street, Manchester  
MEETS 8.00pm on last Thursday of each month

#### MACTAFF - S. WALES MAC GROUP

CONTACT Lorraine Thornback (0333) 411111  
VENUE AppleCentre, 47 Newport Road, Cardiff  
MEETS 7.00pm on 1st Thursday of each month

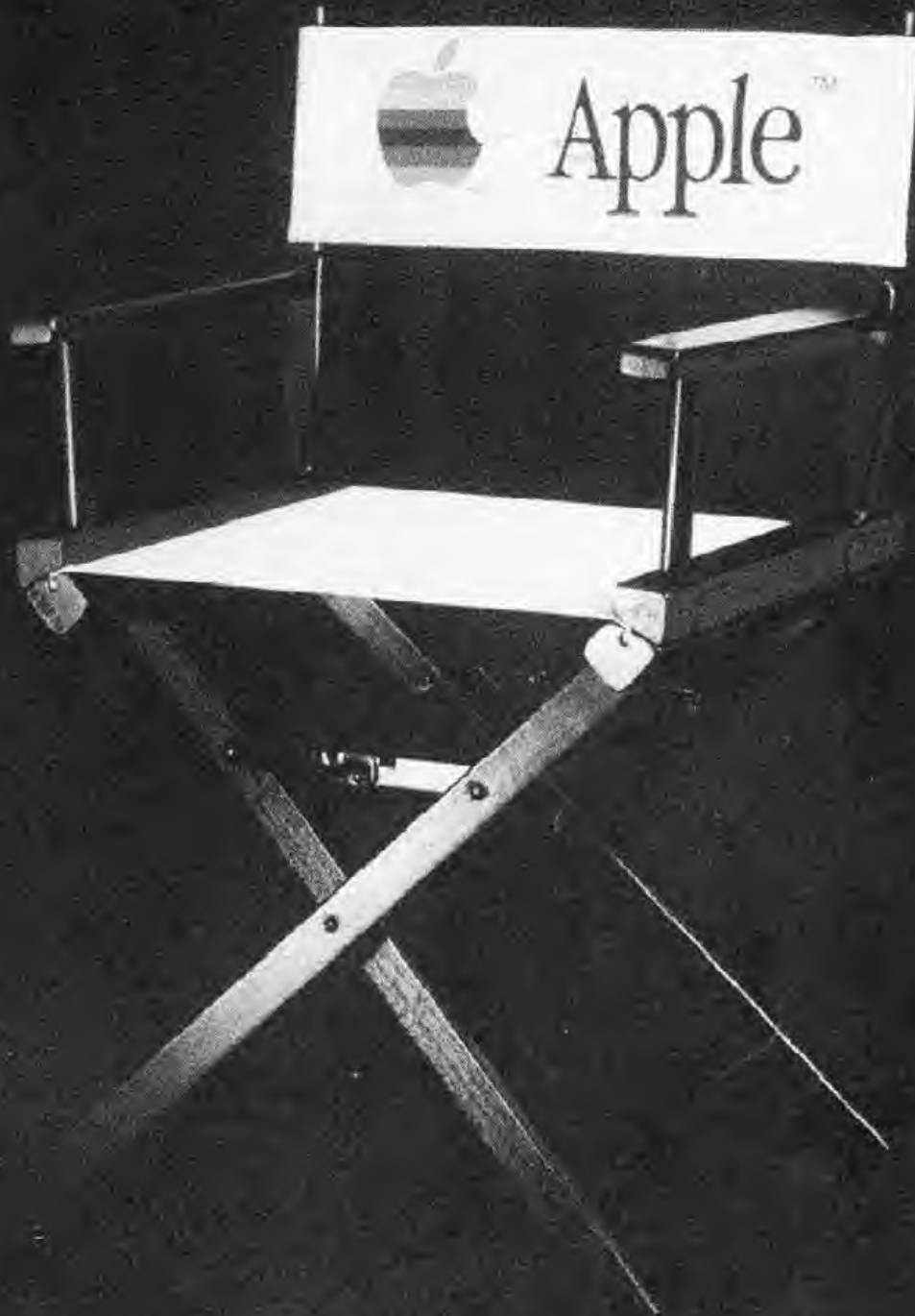
#### SOUTH EAST ESSEX MAC GROUP

CONTACT Mick Foy (0755) 411111  
VENUE D.P.S., Acorn House, Little Oaks, Basildon, Essex  
MEETS 1st Monday every month

Is your local group advertised yet?  
If not contact Tom Wright NOW.







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# HotSpot

from Dave Ward our  
Hotline Wizard

**Weekdays 7-9 p.m.**

Some months ago Jeremy Quinn contacted the Hotline with quite a regular question regarding the compatibility of the **Simon Aristocard** with **AppleWorks**.

Of course, the only answer I could give was the negative one that it didn't appear to follow Apple Computer Inc. rules and was therefore 'blown-out-of-the-water'.

Jeremy contacted the manufacturers of the Aristocard who informed him that they could supply an upgrade enhanced chip for the fine of just £11. If you have an Aristocard that won't work with AppleWorks and find that good value you now know what to do!!

As many of you know the **Apple II** computer had in its **ROM** a **mini-assembler** invoked from the

monitor by FF69G. This mini-assembler disappeared with the introduction of the Apple II plus computer - the mini-assembler and other ROM routines were replaced by Applesoft. The mini-assembler reappeared in late models of the Apple IIc computer and the enhanced Apple IIe computer. So early Apple IIc computers didn't have the mini-assembler but the later versions did and recognised the new 65C02 OP codes. Strangely enough the 65C02 Apple IIe (enhanced) version of the mini-assembler does not recognise the extra 65C02 OP codes! The Apple IIGS does, of course, have a much enhanced mini-assembler that not only recognises all the 65C816 OP but also formats the ProDOS 8 and 16 MLI calls.

A number of callers have alluded to the fact that **Applewriter** version 2.0 (ProDOS version) will not print through the **Apple IIGS** printer ports. One simple solution is to connect your printer to a card in slot 1 and adjust the control panel to recognise 'Your card'.

**Open Apple** magazine have published a method and we will supply an Applesoft program that will automatically patch your Applewriter disk to correct this in the next issue of **Apple 2000**.

If you have an Apple IIGS try the following which is based upon a note in a recent **Open Apple** magazine :-

1. Make sure that you don't have a disk in your 3.5" drive.
2. Change the Control panel so that the machine boots from slot 5.
3. Boot the machine with **open-apple + control + reset**.
4. When the open and close apples are flying back and forth across the screen press **open-apple + option + control-N**.



If you can help Dave with your expertise or have a query - ring him between 7-9 each weekday evening.

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# plusRAM-GS – the ONLY RAMcard you'll ever need!

plusRAM-GS8 is the *only* RAMcard that lets you add up to *EIGHT* extra Megabytes of RAM *AND* half a Megabyte of ROM to your Apple IIGS – the maximum memory possible on the IIGS!

There are two plusRAM-GS cards designed to suit your specific memory needs: **plusRAM-GS2**, supplied with 256K and expandable to 2 Megabytes; and **plusRAM-GS8**, designed to get maximum performance and expandability from your IIGS, with ONE Megabyte and expandable right up to a huge EIGHT Megabytes!

## plusRAM-GS – GREAT PERFORMERS!

Simply plug a plusRAM-GS card into the IIGS memory expansion slot for up to 8 Megabytes of instantly recognised RAM, fully compatible with all IIGS software, like AppleWorks, as well as ProDOS, DOS3.3, CP/M and Pascal 1.3 programs.

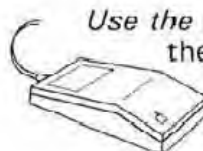
Use all or part of the plusRAM-GS memory as a RAMDisk to give old-favourite programs a new lease of life or use new programs, with advanced desktop displays, graphics and sound, which address the plusRAM-GS memory directly. Either way, you won't believe the extra power and speed!

## AppleWorks POWER

Each plusRAM-GS comes complete with support software to enhance the performance of AppleWorks. As well as increasing desktop size, plusRAM-GS cards boost AppleWorks 2.0 beyond all limits:



A full function, memory-resident calculator pops up onto the screen the instant you need it!



Use the IIGS mouse to move the cursor around or to select menu items

Adds a massive 42K printer buffer which you can assign to any printer. This lets you carry on AppleWorking while it handles the printing – *no more waiting for a slow printer to finish!*



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17/06/87 12:04

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## INSTANT PROGRAMS

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GS2 256K Upgrade – £20.00

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Telephone (0896) 57790  
Source Mailbox – AAH555

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# plusRAM GS2 plusRAM GS8

## Dave Ward takes a close look at two new memory expansion cards for the APPLE IIGS.

As we all know the Apple IIGS computer contains at its heart a 65C816 micro-processor that can directly address 16 Megabytes and that Apple Computer Inc. have conveniently arranged that only 8 Megabytes of this can be RAM. Depending upon how your Apple IIGS was purchased a 1 Megabyte expansion card populated to 256K bytes is supplied or available as an optional extra.

An unexpanded Apple IIGS computer contains just 255K bytes of memory which can be increased to 1255K bytes if a fully expanded 1 Megabyte card is installed. This latter figure may seem excessive to some. Cirtech, however, must have seen that not too far in the future 1 Megabyte of memory in an Apple IIGS will be paltry! Cirtech have designed and produced two memory expansion cards to address this perceived gap in the market:-

PlusRAM-GS2 is a single 2 Megabyte card populated to 256K bytes that can be expanded in sets of 256K bytes consisting of 8 by 256K bit chips. PlusRAM-GS8 is a single 8 Megabyte card populated to 1 Megabyte that can be expanded by increments of 1 Megabyte using 8 by 1 megabit chips.

into any other slot. Placing any of these special Apple IIGS cards into any other slot or for that matter in a slot in any other Apple // computer is an expensive way of producing a small puff of blue smoke!!

Whichever card is purchased it arrives in a very well padded box with an accompanying 3.5" diskette of utilities and a 15 page manual. The manual describes the cards, in glowing terms, of course and then goes on to clearly describe the installation of the card. Near the end of the manual a very detailed description of how to expand your card is presented with diagrams to make the simple process clearer. Tables of suitable DRAMs (Dynamic RAMs) are given for those users, who presumably, can purchase such DRAMs at a lower price than those supplied by Cirtech. All you have to do is to fit the new chips correctly (no extra plugs are required) and the extra memory will be found automatically the next time your machine is switched on. There are diagnostic routines for testing the plusRAM-GS cards supplied on the disk and Cirtech advise you to carry out a test.

We were loaned by Cirtech (UK) Ltd, both a plusRAM-GS2 and a plusRAM-GS8 cards each populated to 2 Megabytes for this and another review. Both cards when installed (1 at a time, of course) were instantly recognised by the Apple IIGS and produced a 'largest selectable' RAM disk of 2048K when the

Ramdisk option on the 'Control Panel' was interrogated. I tested many programs and found them to work perfectly, indeed AppleWorks 2.0 recognised the cards and pro-

duced an enormous desktop of 2113K! If you leave the lid off your Apple IIGS the plusRAM-GS cards are almost the only components that don't get hot.

Before attempting to analyse the reasons why anyone should want so much memory let's look at the three ways in which Cirtech have made software and hardware enhancements.

1. Using plusRAM-GS cards with AppleWorks

The 3.5" diskette supplied with each plusRAM-GS card contains programs that patch AppleWorks files to give many enhancements. Enhancement is a quick and painless process: just boot up the diskette and choose option 3 from the menu, in this case.

Always use a copy of your AppleWorks master diskette for the enhancement! I tested out the procedure using 5.25", 3.5" diskettes and a RAMdisk; all were correctly enhanced.

The box to the right contains a page from the enhanced AppleWorks main menu which shows two of the enhancements. Note first the pop-up calculator RAMCALC invoked by pressing closed-Apple+C and secondly the date-time which always appears in inverse replacing the right-hand end of the dotted line above the command line.

The RAMCALC pop-up calculator may be moved all over the screen using the arrow keys and all entries are made from the keyboard or keypad. Much easier, in my opinion, than pointing out each entry with the mouse. RAMcalc has many features that other pop-up calculators don't have and is extremely easy to use.

RAMcalc has :-

Memory

Percentage %

Square roots

Exponents

Exchange of display and last entry.

Numbers are entered from the keyboard or keypad and arithmetical operators as you might expect to enter them:

Multiply : \* X x

Divide : / D d

The rest are just as simple. Calculations are performed in the order that they are entered.

When you are done just hit ESCape to exit back to AppleWorks. You will notice when you later recall the RAMcalc Resident Calculator that it was exactly the same as when you left it.

A rather nice feature is the ability to move the cursor quickly around



Both cards fit into the special memory expansion slot in the Apple IIGS. Note the caveat that these cards are only compatible with the Apple IIGS and should not be put



the screen using the Apple IIGS mouse. The button acts as 'RETURN' or ESCape (single or double clicks respectively).

The AppleWorks Printer Buffer is a part of the new enhancements. The printer buffer is 42K bytes in size and this is 'lost' from your desktop. I can assure readers that this works perfectly with an Apple IIGS and an Imagewriter printer. Cirtech claim that it will work with any printer providing that the interface card conforms to the Pascal 1.1 protocols. If your card does not follow those aforesaid protocols then there will be no buffer and you will just have to wait! If, of course, you attempt to print a file or files

some of the expanded memory card as a RAM disk from 0K to the maximum memory found in increments of 32K. If you wish to alter the RAM disk size it is best to switch the machine off then on again (leave the machine off for at least 10 seconds).

A> ProDOS instantly recognises this RAM disk which will be formatted at the first access and given a volume name of /RAM5. You can use a suitable copy program to transfer files to this disk; if ProDOS is transferred the disk will be bootable, and you can select this option from the Control panel.

B> CIRTECH CP/M Plus automatically recognises and formats the

cated, is clearly described in the manual. The maximum RAM disk size is 400K with a minimum of 164K. Since Dos 3.3 is patched and INIT command disconnected it may not work with modified Dos 3.3. Tests I have carried out indicated that it won't work with 64K Dos 3.3 variants but will work with Diversi-Dos 48

3. Hardware enhancements are in the form of 'piggy-back' cards which are plugged into a port on the plusRAM-GS cards, and recognised by the Apple IIGS as a 'ROM disk'. The idea, of course, is to allow you to store your favourite programs in these ROM disks and arranging, by altering the Control panel, that these programs 'boot' when the machine is switched on. Three cards are available :-

(a) Promdisk adaptor is a 'piggy-back' card that plugs into both cards which has upto 256K of battery backed memory. These cards are supplied with 64K bytes though.

(b) Romdisk adaptor is similar to the above but uses EPROMS which can have programs or data 'burnt' onto them.

(c) Romdisk-512 adaptor is similar to the above but can be expanded to 512K. This is the apparent maximum for a ROMdisk on the Apple IIGS.

This 'ROMdisk' feature is useful because if the Control panel is set so that on switching on the machine boots from the ROMdisk your specific program will be almost instantly loaded

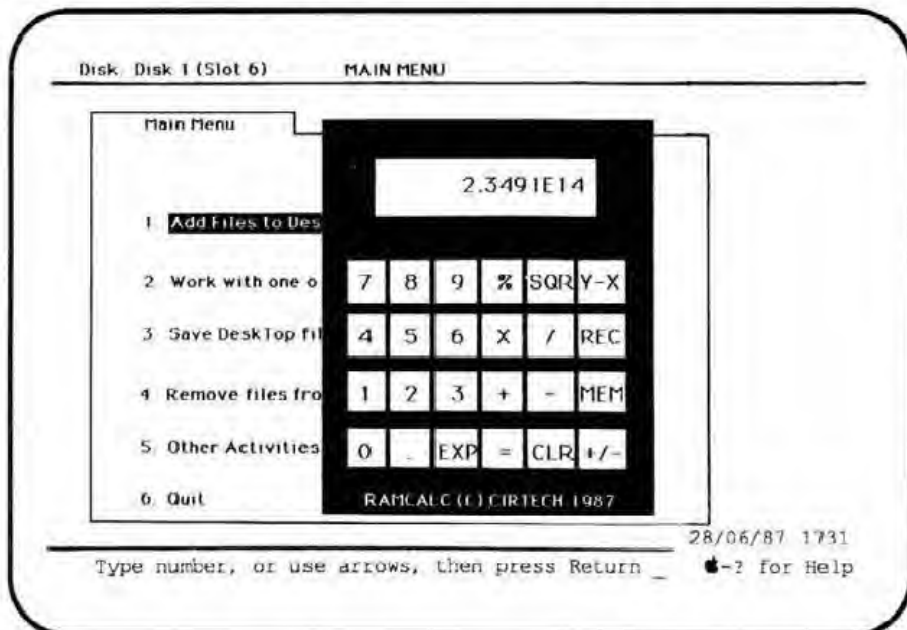
Why so much memory?

At the present time a few users will be able to get along quite nicely with just the 256K expansion card but this is set fair to change in the not too distant future :-

1. Some users already require a larger desktop than that produced by just a 256K expansion card. It also appears that a sixteen bit version of AppleWorks is 'on-the-cards' which will again tempt yet more users to require larger desktops.

2. When you create a RAM disk that memory is partitioned off by the Memory manager and is, therefore, not available to programs.

3. Already Desk Accessories are becoming available which when installed appear under Control panel options when the Control panel is invoked. When a Desk Accessory is installed the Memory manager allocates some memory to it which will not be available for use by your programs. One such Desk Accessory creates a memory cache up to 800K



greater than 42K bytes in size you will have to wait until the buffer can contain the remainder to print.

Saving larger than 135K byte desktop files is possible as Cirtech have added a patch which allows such files to be saved onto one or more 5.25" diskettes. This feature is one of the less useful enhancements on the Apple IIGS because most users will have at least one 800K byte drive. This enhancement has also, unfortunately, introduced a bug which results in the inability to load ASCII text files into wordprocessor, database or spreadsheet. Cirtech have been informed of the bug and have promised to squash it. This may not be as simple as one might assume. Since few users will be continually loading ASCII text files the simple way of overcoming this problem is to convert the files using the unenhanced version.

2. As you know the Control panel has an option for RAMdisk which allows you to partition off

available RAM in the RAM disk. You can then transfer all the necessary files to this RAM disk and boot from this after making the appropriate adjustments to the Control panel. This will be discussed further when we review the CIRTECH CP/M Plus system for the Apple IIGS computer. The manual covers this very well too.

C> PASCAL 1.3 is the only version supported which is reasonable because it is the latest version and the only one I know of that can be booted from a slot other than slot 6. It also recognises other disk drives such as RAM disks and 3.5" drives. Pascal 1.3 will only boot from slots 4,5 and 6 and will work well from the RAM disk which will be designated slot 5, drive 1 when you choose the option from the Control panel to boot from the RAM disk. This setup is clearly described in the manual.

D> Dos 3.3 is also supported ; the method, although a little compli-

bytes to enable Apple IIGS 3.5" drives to load 3 times faster. That 800K would become unavailable for use by program if you've got two drives it even prefers 1.6 Megabytes!!

4. It can be envisaged that future programs will allocated whole blocks of memory for their own 'personal' use. This will enable 'switching' between programs or applications. With such memory requirements even 8 Megabytes could look sickly!

5. For those who don't want to purchase a second 3.5" drive but do want to backup 3.5" diskettes without swapping disks up to 48 times they will be able to copy 3.5" diskettes if they have at least 1 Megabyte of free memory and a copy program such as Diversi-COPY.

If you are thinking of purchasing a new Apple IIGS or just considering the addition of a memory card it is worth a little extra thought as to how much memory you might need in the near future. The plusRAM-GS2 populated to 256K bytes is a similar price to an Apple memory expansion card populated to 256K, for instance. If you already require 1 Megabyte or more it is worth seriously considering the plusRAM-GS8 since it is almost certain that more memory will be required before too long.

In conclusion the two plusRAM-GS cards are excellent memory expansion cards for the Apple IIGS which appear to work perfectly well with all programs that run on an unexpanded Apple IIGS. They present a very good buy when one considers the software supplied with them.



plusRAM-GS2 ( 256K) £ 99.00

plusRAM-GS8 (1024K) £ 249.00

Upgrade GS2 ( 256K) £ 20.00

Upgrade GS8 (1024K) £ 125.00

**CIRTECH (UK) LIMITED,**  
Currie Road Industrial Estate,  
Galashiels  
Selkirkshire, Scotland, TD1 2BP  
Telephone (0896) 57790

Telex 265871 (Attn 84/CPD001) - Telecom Gold  
Source Mailbox - AAH555



# The games some of us play !

## Tom Wright gives an overview to a new series of reviews on SSI's simulation packages.

Strategic Simulations have very kindly supplied a number of SSI games for review which should interest most of our game playing fans; the games which are all suitable for the Apple range include:

Warship  
Phantasie II  
Roadwar 2000  
Rebel Charge at Chickamauga  
Mech Brigade  
Kampfgruppe  
Battle of Antietam

Phantasie II is reviewed elsewhere in this issue and Warship will appear in the October issue.

Here are brief details of the games.

### ROADWAR 2000

**ROADWAR 2000** is a hi res action adventure set in the year 2000 in a U.S.A which has experienced the effects of bacteriological warfare. Social order has been reduced to a level reminiscent of the Mad Max scenarios, the player as the leader of a gang has been asked by what is left of the Federal Government to locate eight scientists.

The scientists are to be taken to a laboratory where they are expected to produce a vaccine to neutralize the deadly microbes remaining from the war. Graphics are very good during the game during which you will hunt through various kinds of terrain in your search and subsequent transport mission. Vehicles can be found in various locations as can food, fuel and weapons but you not only have to hunt for them but also fight off mutants, cannibals and rival road gangs in the process. Looks good, more news later.

### REBEL CHARGE AT CHICKAMAUGA

**REBEL CHARGE AT CHICKAMAUGA** should be of interest to wargamers (and you can count many chess players in that category after they have encountered this kind of game). Chickamauga was the last major offensive thrust by the Confederacy during the American civil war.

The game covers the two-day battle by means of a 64x54 grid map and to simplify the players task a laminated card map is provided with the game. Screen display provides two 'scales' of view for part of the full map (40x20 and 20x10), while the card covers the full map. The player really gets three games in one package with this one as there are three different levels of play.

### MECH BRIGADE

**MECH BRIGADE** is a simulation of modern armoured warfare played with the aid of an excellent manual and prompt card. The player commands either NATO or Warsaw Pact forces which include a wide range of armoured vehicles and other weapon systems in a game which includes what appears to be some excellent command options and engagement rules. The hypothetical time frame is the 1990's and the theatre of combat is Europe.

### KAMPFGRUPPE

**KAMPFGRUPPE** won the 1985 Game of the Year award from



Computer Gaming World and has already established a reputation as being a very interesting game. This one is a tactical game set against the background of the Eastern front during the second world war. Choice of command for the player includes both German and Russian armies.

The list of weapons and vehicles included in this game is very large and watching the demonstration sequence has shown me a level of weapon simulation that is beyond anything that I have seen before. Looks like a must for tactical war-gamers.

## BATTLE OF ANTIETAM

**BATTLE OF ANTIETAM** won the 1986 Consumer Electronics Show-case award and appears to be at least as interesting as the Chickamauga game. The American civil war is the setting for this game which also provides three games in one via its three levels of play.

Various kinds of artillery, cavalry and infantry are available for control by the player who has the option of Union or Confederate control.

Again an excellent manual is provided, together with a useful laminated map.

## WARSHIP

**WARSHIP** as the name implies is a naval game, set against various combat episodes during the second world war the player has a choice of any of four scenarios, or they can elect to construct their own. During play ships can be controlled individually or in groups as units of various divisions. Weapon control and manoeuvre offer some interesting challenges to the player and there are no easy wins in this game. 79 different vessels are listed in the manual which lives up to the normally high SSI standards.

It is hoped to review one or two of these simulation games per issue until we exhaust the supply.

You should be able to get them via your Apple dealer or through the mail from MGA MicroSystems at Tenterden.

## TESTING RAM ON Iie or Iic AUXILIARY MEMORY

The following program (by Glen Bredon of WAP) uses mousetext characters so its messages are only legible on a IIC or an enhanced IIE. Enter the following to create a BRUNable program.

```
CALL -151
0803: A9 3F 85 3C A9 08 85 3D A9 CD 85 3E A9 0C 85 3F
0813: A9 00 85 42 A9 09 85 43 38 20 11 C3 38 B8 48 A9
0823: 00 8D ED 03 A9 09 8D EE 03 68 4C 14 C3 20 2F FB
0833: 20 93 FE 20 89 FE 8D 0F C0 6C F2 03 2C 81 C0 8D
0843: 09 C0 20 89 FE 20 93 FE 20 2F FB 8D 0C C0 8D 01
0853: C0 8D 0F C0 20 D2 0C A0 C1 D5 D8 A0 D2 C1 CD A0
0863: D4 C5 D3 D4 8D 8A 56 57 56 57 56 57 56 57 56 57
0873: 56 57 A0 E2 F9 A0 C7 EC E5 EE A0 C2 F2 E5 E4 EF
0883: EE A0 57 56 57 56 57 56 57 56 57 56 57 56 8D D4
0893: E8 E9 F3 A0 F0 F2 EF E7 F2 E1 ED A0 F4 E5 F3 F4
08A3: F3 A0 D2 C1 CD A0 E1 E2 EF F6 E5 A0 A4 B2 B0 B0
08B3: B0 A0 E9 EE 8D E1 F5 F8 E9 EC E9 E1 F2 F9 A0 ED
08C3: E5 ED EF F2 F9 A0 E2 F9 A0 E1 EC F4 E5 F2 EE E1
08D3: F4 E5 EC F9 A0 F3 F4 EF F2 E9 EE E7 8D A4 B0 B0
08E3: AC A0 A4 B5 B5 AC A0 A4 C6 C6 AC A0 A4 C1 C1 A0
08F3: E9 EE A0 B8 CB A0 E2 EC EF E3 EB F3 A0 E1 EE E4
0903: 8D ED EF F6 E9 EE E7 A0 F4 E8 E5 F3 E5 A0 F4 EF
0913: A0 F4 E8 E5 A0 E8 E9 F2 E5 F3 A0 F3 E3 F2 E5 E5
0923: EE AE 8D C9 E6 A0 E1 EE A0 E5 F2 F2 EF F2 A0 E9
0933: F3 A0 E6 EF F5 EE E4 AC A0 E9 F4 F3 A0 EC EF E3
0943: E1 F4 E9 EF EE A0 E9 F3 8D F0 F2 E9 EE F4 E5 E4
0953: A0 E1 EE E4 A0 F4 E8 E5 A0 E2 F9 F4 E5 A0 E6 EF
0963: F5 EE E4 A0 C5 CF D2 A7 E4 A0 F7 E9 F4 E8 8D F4
0973: E8 E5 A0 E3 EF F2 F2 E5 E3 F4 A0 E2 F9 F4 E5 A0
0983: E9 F3 A0 E4 E9 F3 F0 EC E1 F9 E5 E4 AE A0 A0 CF
0993: EE EC F9 8D F4 E8 E5 A0 E6 E9 F2 F3 F4 A0 EF E6
09A3: A0 F4 E8 E5 F3 E5 A0 E9 EE A0 E1 EE F9 A0 B8 CB
09B3: A0 E2 EC EF E3 EB A0 E9 F3 8D F3 E8 EF F7 EE AE
09C3: 8D 53 53 53 53 53 53 53 53 53 53 53 53 53 53
09D3: 53 53 53 53 53 53 53 53 53 53 53 53 53 53 53
09E3: 53 53 53 53 53 53 53 53 8D CB E5 F9 A0 D8 A0 F4
09F3: EF E7 E7 EC E5 F3 A0 E6 F5 EC EC AF ED E9 F8 E5
0A03: E4 A0 F3 E3 F2 E5 EE AE 8D CB E5 F9 A0 AF A0
0A13: F4 EF E7 E7 EC E5 F3 A0 E4 E5 EC E1 F9 A0 A8 43
0A23: A9 A0 E2 E5 F4 F7 E5 EE A0 E2 EC EF E3 EB F3
0A33: AE 8D 53 53 53 53 53 53 53 53 53 53 53 53 53
0A43: 53 53 53 53 53 53 53 53 53 53 53 53 53 53 53
0A53: 53 53 53 53 53 53 53 53 53 8D A0 A0 A0 A0 A0
0A63: A0 C5 D3 C3 C1 D0 C5 A0 E5 F8 E9 F4 F3 A0 F4 E8
0A73: E5 A0 F0 F2 EF E7 F2 E1 ED AE 8D 8A 53 53 53
0A83: 53 53 55 A0 C8 E9 F4 A0 F3 F0 E1 E3 E5 A0 E2 E1
0A93: F2 A0 F4 EF A0 F3 F4 E1 F2 F4 AE A0 48 53 53
0AA3: 53 53 53 8D 00 A0 00 C0 C9 A0 D0 F9 2C 10 C0 2C
0AB3: 83 C0 A2 01 86 E7 86 E9 A2 20 86 E1 86 E4 A0 00
0AC3: 84 E8 84 E0 84 42 98 8D 04 C0 91 E0 C8 D0 FB E6
0AD3: E1 CA D0 F6 2C 57 C0 2C 53 C0 2C 50 C0 8D 05 C0
0AE3: A9 00 85 E5 20 C3 0B A9 55 85 E5 20 C3 0B A9 FF
0AF3: 85 E5 20 C3 0B A9 AA 85 E5 20 C3 0B 4C A4 0B A2
0B03: 00 86 E6 BD 83 C0 A9 20 85 E4 20 82 0C 20 67 0C
0B13: 20 51 0C A9 40 85 E4 20 82 0C 20 67 0C 20 51 0C
0B23: A9 60 85 E4 20 82 0C 20 67 0C 20 51 0C A9 80 85
0B33: E4 20 82 0C 20 67 0C 20 51 0C A9 A0 85 E4 20 82
0B43: 0C 20 67 0C 20 51 0C A9 D0 85 E4 20 82 0C 20 67
0B53: 0C 20 51 0C A9 E0 85 E4 20 82 0C 20 67 0C 20 51
0B63: 0C A2 08 86 E6 BD 83 C0 A9 D0 85 E4 20 82 0C 20
0B73: 67 0C 20 51 0C 60 2C 82 C0 2C 51 C0 18 B8 48 A9
0B83: 30 8D ED 03 A9 08 8D EE 03 68 4C 14 C3 A5 E4 85
0B93: E1 E1 E0 45 E5 F0 03 4C 5D 0D C8 D0 F4 E6 E1 CA
0BA3: D0 EF 60 A5 E4 85 E1 8D 04 C0 B1 E0 91 42 C8 D0
0BB3: F9 E6 E1 E6 43 CA D0 F2 8D 05 C0 4C 97 0C 85 E1
0BC3: A2 20 A0 00 A5 E5 91 E0 C8 D0 FB E6 E1 CA D0 F6
0BD3: 20 F7 0C A0 00 24 E8 30 0E A2 04 98 18 69 01 D0
0BE3: FC C8 D0 F8 CA D0 F5 AD 00 C0 10 1D 2C 10 C0 C9
0BF3: 9B F0 83 C9 AF D0 04 45 E8 85 E8 C9 D8 D0 0A A9
0C03: 01 45 E7 85 E7 AA BD 52 C0 A2 20 86 43 60 20 58
0C13: FC A9 0D 85 24 68 85 E2 68 85 E3 D0 03 20 ED FD
0C23: A0 00 E6 E2 D0 02 E6 E3 B1 E2 D0 F1 A5 E3 40 A5
0C33: E2 48 60 2C 81 C0 A9 14 20 5B FB 20 8E FD 24 E8
0C43: 30 05 A9 43 20 ED FD 20 D9 0C A0 8D 00 A6 E9 20
0C53: 4A F9 A9 88 20 ED FD A6 E9 E0 27 08 90 04 A9 00
0C63: 85 E9 E6 E9 28 B0 06 20 D9 0C 46 47 00 20 D9 0C
0C73: 8D D4 E5 F3 F4 E9 EE E7 RA A0 A4 00 A5 E4 A2 00
0C83: 20 41 F9 20 D9 0C AD A4 00 A5 E4 18 69 1F A2 FF
0C93: 20 41 F9 A6 E6 BD 83 C0 60 2C 81 C0 2C 53 C0 48
0CA3: 84 EA 20 D9 0C A0 A0 C5 F2 F2 EF F2 A0 E1 F4 A0
0CB3: A4 87 87 87 00 A5 E1 A6 EA 20 41 F9 A9 BA 20 ED
0CC3: FD 68 20 DA FD A6 E6 BD 83 C0 60
BSAVE EXT.RAM.TEST,A$0803,L$04CB
```

## MICOL SYSTEMS MACRO ASSEMBLER FOR IIGS

**Micol Systems** of Toronto, Canada announced the introduction of **Micol Macro**. Micol Macro is a fully integrated monitor/shell, full screen text editor, and macro assembler package which has been written on the Apple IIGS for the IIGS.

The minimum requirements for Micol Macro is a IIGS with a minimum 512k memory, a Unidisk 3.5 and a monitor capable of displaying 80 columns.

Micol Macro is written in assembler for speed and is fully integrated. All commands whether accessing the full screen text editor, the auto relocating macro assembler or talking to the operating system are instantaneous.

Full professionally written documentation is included and this contains useful examples to help make the best use of the program.

Price on Introduction is \$69.95 + Shipping. Apple2000 will have full details of U.K. prices in the next issue.

### PRINTRIX PERSONAL TYPSETTING SOFTWARE FOR THE APPLE II FAMILY.

**Printrix** is a ProDOS program which accepts textfiles from AppleWorks, AppleWriter, Word Perfect and any standard ASCII file. You can then format the files according to your page design. Printrix comes with 43 fonts and 25 pieces of Clip Art. It can also use Fontrix fonts and graphics through a conversion utility. You can print in full colour on colour printers and it will run on the Apple IIGS.

Price £54.99 from **MGA MicroSystems** 05806 4278

### NOTES • N • FILES

The latest file management program for the Apple IIGS has arrived from DataPak Software - '**Notes n Files**'. The screen display represents a filing cabinet and through the use of graphics, the mouse and keyboard allows you to organize, manipulate and cross reference files of various types. Mailing labels and form letters are possible and the program has a text editor as well as Database Manager. Price £99.99 from **MGA MicroSystems** 05806 4278

### SEND YOUR BITS & BYTES VIA PROLINK.

**ProLink** is the easiest way to transfer files between the Apple II and Macintosh. Put your Apple II (3.5) disk into the Macintosh and using ProLink transfer the files to a Macintosh floppy or Hard Drive. Requirements are a Macintosh with external floppy or Hard Disk. Price £39.95 from **MGA MicroSystems** 05806 4278

### DIMENSIONS ON THE MACINTOSH 512K OR MAC II

**Dimensions** is a three dimensionl design and modeling tool which uses the Macintosh Interface. Using all the magic of the Mac this new package will allow you to visualise pictures and drawings with accuracy and speed. The Macintosh II colour and other enhancements are catered for and you can print to ImageWriter, LaserWriter or Plotter. Up to 16 windows on a scene are allowed with a choice of 18 views for each window. Other features include free form curves, auto conversion of curves to surfaces and shading. For price and details contact **DeskTop Engineering** - 0895 637037

### NEW HFS LOCATER PLUS 2.0 AND APPLESHARE.

The latest release of this Hierarchical File System that sits under the Apple Menu from PBI Software now includes full support under AppleShare. If you have ever lost a file somewhere on your hard disk or on the network then you will appreciate this excellent utility. Price \$34.95

### DESKSCENE BRIGHTENS UP YOUR DESKTOP.

Replace your boring grey patterned Desktop with any MacPaint picture. **DeskScene** allows you to make any picture (Paint format) into a background for the Desktop. Created for PBI Software by Bruce Horn (the Macintosh Finder co-author) you can now have pretty pictures to identify your disks on startup. Price \$29.95

### HD BACK-UP UPDATED TO VERSION 1.6

Support for 400k, 800k and Hard disks are included with the new version of **HD Back-up**, it now works on the Lisa using MacWorks. Perform both global, incremental and single file back-ups on your data. HD Back-up is another PBI Software masterpiece. Price \$49.95

### SUPERMAC'S NEW DISKFIT.

A new version of **Diskfit** has been released that will work under AppleShare - called 'Network Diskfit' it allows an individual user to backup both files at his workstation or his personal files on the server. Diskfit also keeps all folder attributes intact. Diskfit is also available as a single user version. Price £49.95 (single user) £299.95 for AppleShare Multi User. From SuperMac Software, 01-847-2101.

### SUPERLASERSPOOL UPDATED.

SuperMac have announced that **SuperLaserSpool** version 1.2 is now shipping and has many enhancements including: Now works with Aldus driver; Improved portability of files; Preview of files in print queue. Two versions are now available single & multi user. Prices £99.95 (single) £299.95 (multi user). From SuperMac Software, 01-847-2101

DEALER'S, DISTRIBUTORS AND MANUFACTURERS ARE ASKED TO SEND FULL DETAILS OF NEW OR ENHANCED PRODUCTS FOR INCLUSION IN THIS MAGAZINE. WE ARE ALSO WILLING TO REVIEW PRODUCTS - FOR MORE INFORMATION CONTACT THE EDITOR VIA THE P.O. BOX.



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## ALPHATRONICS

(Please note all items are compatible with all versions of Apple DOS, ProDOS, CP/M and Pascal unless otherwise stated)

### RAM MEMORY EXPANSION

**16K RAM card** II/II Europlus/II+, gives 48k CPUs the extra memory to run CP/M and Pascal op systems. **£25**

**64K/80 COLUMN** extended text card IIe, gives 55k with AppleWorks, 60k ramdisk with ProDOS. **£25**

**128K RAM card** II/II Europlus/II+/IIe **£69**

**1MB RAM expansion/80 COLUMN** for IIe RAMWORKS compatible, RAM disk facility - the latest addition to our range and astonishing value, populated with 1MB RAM **£89**

### MASS MEMORY

**140k half height** floppy drive, pancake motor high quality direct drive XM4 mechanism - Japanese origin **£89**

**13/16 sector**, twin port disc drive controller (suitable for use with both standard Apple or half height drives) **£25**

**Z-80 coprocessor card**, to run CP/M software **£25**

### PRINTER / SERIAL INTERFACES

**Epson/Centronics** incl cable, supports all standard control codes and graphic manipulation features **£29**

**Grappler + compatible** incl cable **£29**

**Grappler + compatible** with 64K printer buffer incl cable **£59**

**RS232 serial printer card** **£29**

**Serial plus card** - suitable for use with modem, with software selection of protocol and full Apple super serial emulation **£49**

### 80 COLUMN

**80 column** Videx compatible for II+/II Europlus (has built in 40col/80col softswitch) **£35**

**80 column extended text card** for IIe, with 64K memory, gives 55K with AppleWorks, 60K ramdisk with ProDOS **£25**

**80 column text card** for IIe **£19**

### KEYPADS / KEYBOARDS

**IIe keypad**, 16 keys: plugs directly into port on IIe mother board, has following keys + - \* = . ENTER 0 1 2 3 4 5 6 7 8 9 **£19**

**Replacement keyboard** for IIe **£49**

### OTHER HARDWARE FOR II + AND IIe

**Heavy duty power supply** 7.5A output **£49**

### ALPHATRONICS

**Wolverley House, 18 Digbeth,  
Birmingham B5 6BJ**

**Phone: 021 643 9866 (4 Lines)**

All prices exclude VAT.  
Delivery: £3.00 + VAT for orders less than £100, over £100 delivery free (Items by carrier £8.95 + VAT extra)

# WHAT'S IN A LANGUAGE?

## Dave Miller introduces his new series on languages.

How many of you, I wonder, have ever used a non-Apple machine? I doubt if very many have. There is a great big world of varied computing just waiting to be explored for those who are lucky enough to have been put in the position of using several different and contrasting machines.

Since not everyone is fortunate enough to own their own Cray II, VAX 11/780, ICL 2976 or IBM 360 to play with I hope that the following series of articles might convince the more insular of our members that there is life outside of the Apple.

I shall be trying to cover some of the most commonly used languages found in the computer world at large, as well as some of the more exotic. I will not attempt to write a user guide for each language but I hope to impart some of the flavour of the language.

I shall begin with the first language in the next issue, for the rest of this month's instalment I shall deal with some (hopefully) useful background information.

I feel that at this point I should say that a working knowledge of BASIC is advisable before reading on (quick! find that manual!).

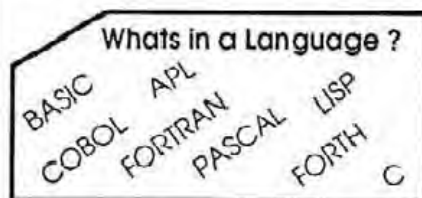
When computers were first developed, programming was a matter of wiring up the computer's components in a particular way. This made it rather expensive and time-consuming to reprogram the computer since it entailed rebuilding a large section of it. Later developments were to use a series of circuit boards with many holes in each board's surface, all arranged into rows and columns. A program was defined by inserting conductive pins into some holes and leaving other holes empty.

Later programming was done by flicking a series of switches on a 'front panel'. This had two sets of switches, one to indicate which part

of memory was to be modified, and the other to indicate the new value to be placed in the particular 'memory location'.

These methods all had one thing in common: they were incredibly laborious. It was soon thought a good idea to automate the setting of the front panel switches by punching the various switch positions on a paper tape: a hole usually meant 'switch on' and no hole usually meant 'switch off'. Paper tape and its much older cousin, punch cards, were soon adopted as the main way of entering programs, and data, into a computer and for storing them between runs.

International Business Machines (who?) had, and still has, a great effect in the computing industry and it was the first body to produce a 'standard' form of punch card. This had eighty columns of possible hole positions; the number of rows varied from eight to up to twenty-four which allowed for eighty characters per card (80x24... those dimensions remind me of something else).



Those veterans of this era often wax lyrical about its excitement and its 'this has not been done before' atmosphere: it was a time when programmers were also mathematicians or electricians (or both), software gurus could speak in fluent binary machine code and a software patch was applied with scissors and sticky tape. Fortunately, such days have passed.

Up to this point (the early 1950s) programmers programmed in binary: there was no such thing as an assembler and the idea of a computer language was unheard of. Raw binary machine code was the only programming medium. The introduction of punched card and paper tape made it possible to enter some sort of textual code rather than a continual stream of binary or, if one of the new state-of-the-art machines were being used, octal (base 8). It proved relatively easy to convert the paper tape produced by a teletype into a form readable by a computer. The teletype acted as both input device and printer and so allowed characters, rather than numbers, to represent programs.

Later developments included a specially designed keyboard and card-puncher which was used to punch programs onto punched cards. Computers had printers attached directly, allowing much more data to be output in one time.

It was not long before the first simple assemblers were developed, followed fairly quickly by the first real computer languages.

Scores of 'data entry personnel' were employed to sit at keyboards and type in programs written by programmers on 'coding sheets'. The resultant paper tapes or punched cards were then given to the computer operators who were under pain of death not to drop the punched cards or get them out of order. They then stuffed them into a tape drive or card reader, ran them all (in one complete batch) and then, often several days later, gave any output back to the programmer. It must have been bad enough programming in an environment where it took you a couple of days to remove one bug from your program but can you imagine trying to learn how to program using such a system?

Only fairly recently has the modern method of using a Visual Display Unit and keyboard become standard: many computing centres until recently still used paper tape or punched card and most mini and mainframe machines still have a front panel which may have to be used when booting the machine.

The idea of using coding sheets is still not dead: some establishments have data entry staff and prefer its users to enter their code via these sheets.

The development of the computer language has, by and large, followed the developments in processing power and in the ease of



entering programs into the computer. As computers and their input and output devices have become more powerful, so have the computer languages. This is generally because the computer has become powerful enough to support the demands of the newer languages. For instance the Windows, Icons, Mice and Pull-down menus (WIMP) environment of the Mac is not new, as most people believe. It was developed in the late 1960s and early 1970s by Xerox at their Palo Alto Research Centre. Only recently have small computers become powerful enough to support WIMP. The same was true with some of the early languages, most notably with ALGOL: it was some time after the publication of the language specification before a full ALGOL compiler was properly implemented.

The development of newer languages depends upon the development of effective and powerful translator programs. These translators effectively automate the act of writing machine code: their input is a computer program in a language such as FORTRAN (the source file) and their output is the translated machine code program (the object file). Generally the source file is a text file and the object file is a binary file.

At first, the only translators available were assemblers, which convert an easy to remember mnemonic into the actual binary numbers which make up the machine code. Later translators used an abbreviated, coded and formalised form of English which it analysed and converted into machine code. This special form of English is the computer language.

These translators are rather different to the translator used in Apple-soft BASIC. Most BASICs use an INTERPRETER. An interpreter translates a language statement just before it is about to be executed. Most translator programs are COMPILERS. A compiler converts the whole program, en masse, into machine code before any of it is executed. The machine code is then saved so that the program need only be compiled once.

The difference between the two can be best envisaged by imagining that two people, A and B, are trying to converse but each does not speak the other's language. A translator, C, is called in to mediate. This translator is an interpreter: A says something to C, C translates it and then passes it on to B. B, in turn, says something to C and C translates the

message and relays it back to A. In this situation, where the messages are undefined until they are actually spoken, an interpreter is ideal: each message is translated just before it is passed to the recipient.

Imagine now that the two people are corresponding to each other. Each person writes a letter containing all that he/she wants to say about a series of topics. He/she then gives the letter to the translator which converts it, en masse, into the other person's language. In this situation, where the messages are previously defined, a compiler is ideal: all the messages in each letter are translated at the same time, before the letter is passed to the recipient.

Obviously a compiler does not duplicate the translation work unlike an interpreter which has to re-interpret each statement it reaches even if it has already executed the statement before. This is one of the reasons why compiled languages are so much quicker to run: the translation has already been done beforehand.

Usually, compilation is by far the best way to convert a program into machine executable form. Interpreters are generally reserved for those languages which, such as BASIC, were originally aimed at being both easy to use and not requiring a large amount of memory. Interpreters are also sometimes used for debugging a program which, when debugged, is compiled.

Most systems adopt a three-stage process in translating a program from the source language into its executable form. First it is compiled. This produces an object file. Usually this is the machine code but without any external references. Thus common routines such as file handlers and mathematical functions are not actually included in the code. Often the code is also relocatable, in other words the machine code does not refer to any particular area of memory.

The second stage is called linking. Here all external routines such as mathematical functions are linked into the code. Some systems actually link the routines themselves whilst others just 'tag' the routines: their location is noted so that they can be found later (usually when the code is actually loaded into the computer's memory). Some systems include this stage with the next.


The last stage is called loading. This is where the code is made to refer to a particular area of

memory. The result is directly executable code. Many systems only perform this stage when the program is just about to be run because only then can its exact position in memory be calculated. In this case loading results in the code's placement in some section of the computer's memory and has to be repeated each time the program is run.

One of the reasons why some languages use interpreters, at least when developing software, is because the above operations can be rather cumbersome on some machines. The time taken to modify a program and rerun it via an interpreter may well be less than the time taken to edit the source file and then compile, link, load and run the program.

All compiled languages are usually developed via an editor. This is similar to a simple word processor. This means that line numbers are not needed in the code for editing purposes. Some editors provide their own line numbers but an increasing number of editors are screen-orientated and so do not need line numbers.

One thing that I feel is worth stating is that the much vaunted 'language standards' one hears about are really a myth. There is no such thing as a standard language because different manufacturers insist on developing different compilers with extra features for their own particular hardware/software configuration. The standard language is really a uniform subset of the language which is met by all conforming compilers. They may, or may not, provide extra features which are non-standard and unsupported on other machines.

I think that that is enough background to be going on with. Stay tuned to this magazine for the next exciting instalment: FORTRAN- the most ancient, and long-lived of languages. 

Dave Miller is supplying us a whole series of articles on various languages, we anticipate publishing one each issue. Many thanks to Dave for getting our grey matter going.

### Whats in a Language ?

Coming next Issue:  
**FORTRAN**

# PINPOINT 2.0

## Nigel Bradley takes a look at the latest AppleWorks Desktop accessories.

For any mortal (that is any Apple Nut) obsessed with AppleWorks, the PINPOINT Desktop accessories are just what the doctor ordered.

### Introduction

With PINPOINT the Apple user has eight accessories available for instant use in the AppleWorks word processor, database or spreadsheet.

The accessories are:

**Appointment calendar.**

**Calculator**

**Communications.**

**Telephone dialer.**

**Graphmerge.**

**Notepad.**

**Quicklabel.**

**Typewriter.**

PINPOINT also works with ProDOS Basic, AppleWriter (ProDOS version), and Word Perfect.

The package includes a non copy protected double sided disk and a well bound manual of over 200 pages which has many pictures of the 'accessories in action'. The tutorial seems a little superfluous due to the fact that PINPOINT is so easy to use.

When booted a menu screen allows selection of either the tutorial, an exit to ProDOS basic with PINPOINT or the main installation menu.

### Installation

Installation is fairly straightforward and uses the well known AppleWorks filecard approach, first a printer set up routine which caters for most commonly used printers and interface cards. (Pinpoint version 1.3 or lower required a

separate printer enhancement disk).

Next comes the modem set up routine for the communications accessory and dialer. This set up is typically American and at first a little confusing with regard to area codes. The modems that will work with PINPOINT are the Apple modem or any Hayes compatible modem. A modem enhancement kit is available as a separate program to enable fine tuning of your modem should it be a different type to the ones mentioned above.

The third step is to tell the PINPOINT program where to look for the accessories. This will normally be slot 6 drive 2 but can be altered to suit individual requirements. For the super rich people out there who own Unidisk 3.5's or the Apple IIGS then the accessories can be moved onto the AppleWorks disk. (Ram disks come later you'll have to carry on reading).

The last step is to install PINPOINT on to the application program. Assuming AppleWorks is chosen the user is prompted to put the AppleWorks startup disk in Drive 1 press return and pray that everything will go well. Assuming all went well playing can now commence.

A quick word here to say that should you require to change any of the set up parameters say a different printer, then the installation routine must be repeated. A good idea is to make a number of disks with differing set-ups.

Boot the modified AppleWorks and you will be greeted with a short message that the PINPOINT accessories will be recognised. Pressing 'solid-apple-P' will cause a pop-up menu to appear, the accessory required can be selected using the arrow keys or by pressing the initial letter of the accessory and pressing

return. However you cannot use key presses to select Communications because if you do you will get Calculator. Pinpoint have missed this one.

### Appointment calendar

A large calendar is displayed which shows the current month provided a clock is installed and recognised by AppleWorks. Otherwise April 1985 is displayed from which you may move to the date you require. Displayed to the right of this are three smaller displays showing the previous month and the next two months.

On the current month display the current day is highlighted in inverse and any appointments entered are marked with an asterisk in the appropriate day. The calendar can be incremented or decremented by using the open-apple and the up or down arrows. The calendar decrements as far as April 1985 and extends up to December 1990. (I suppose the Apple will be out of date by Jan 1991).

By using the open-apple-? (help) keys a help menu appears. Only 255 days can be scheduled for appointments at any one time and therefore old appointments must be deleted should this limit be reached. Each appointment can be 32 characters by 32 lines. This I think will be quite acceptable for most people.

### Calculator

The calculator is very basic with addition, subtraction, multiplication and division and a cancel last entry key. It is shown to the right of the display and although basic can be very useful when in the word processor for doing a bit of simple arithmetic.

### Communications

This allows the user to set up his terminal to match the system he wants to call. A phone directory is also part of the communications accessory enabling a 'name', 'phone number' and 'logon' macro to be stored for PINPOINT to automatically dial when requested. The sending and receiving of files is also possible from this accessory.



## Dialer

Now this is just the job for lazy people. The Dialer will scan the monitor screen and highlight any number it thinks is a phone number, if you accept this number the Dialer will ring it for you. (The phone will require picking up when someone answers.)

## Graphmerge

The Graphmerge accessory allows the printing of graphics into word processor documents. On selecting this accessory a catalog of word processor files on your data disk will be shown. After choosing a file in which to add a picture open-apple-M (merge) will allow selection of a picture from another disk.

Once this selection is made the picture will be displayed, at which time you can choose to take only a portion of the picture by using a cropping cursor or in fact all the picture. The word processor file will then be re-displayed and an 'L' shaped cursor will show where the top left of the picture will start after pressing return.

The picture can be placed anywhere within the word processor file and then printed. Pictures can be printed in differing modes of half/full width, half/full height or normal / inverse. Pictures created using DazzleDraw or MousePaint can be used with Graphmerge.

## Notepad

This accessory is a way of jotting down any thoughts that one may have whilst working on a file and will save on numerous scraps of paper.

A note can be 32 lines long with 62 characters across. The Notepad also incorporates full word wrap-around. Any note can be printed or saved for later retrieval.

## Quicklabel

With Quicklabel, an address on a single label or on an envelope can be printed very quickly indeed.

Just make sure that the information required on the label is shown on the screen, select Quicklabel from the accessories, move the

cursor to the first character required on the label and hit <return>. A highlighted portion of the screen appears, this portion is what Quicklabel thinks is the area that needs printing.

If it is wrong then you can expand the area up to 8 lines by 80 characters or contract the area to 1 line and 1 character. If more than 1/4 of the screen is selected then it will be printed with no more input from the user. If less than 1/4 of the screen is selected then a display of an envelope appears complete with stamp and the information can be moved to the desired printing position.

## Typewriter

This turns your printer into a typewriter but allows full editing before printing.

A line length of 70 characters is allowable and after typing the information required, editing as necessary all that needs to be done to print is press <return>.

Printing can be in numerous styles and character sizes, all selected from an option screen just below the typewriter display.

## Requirements

PINPOINT can be run on an enhanced Apple //e, //c or GS and provided you can wait around for most of the evening waiting for accessories to load from disk you'll enjoy using it. But of course if you have a super add on RAM card (ideally 512K or larger) then things can really start to move.

Enter the PINPOINT RAM Enhancement kit. This disk will allow the PINPOINT accessories to be loaded to a RAM drive and will greatly improve the speed (eg most accessories will load from disk in under 30 secs, Graphmerge takes nearly a full minute).

The RAM enhancement kit allows selection of the required accessories (you may not want them all) to be automatically loaded on start up of AppleWorks.

The RAM cards that work with PINPOINT are:-  
Apple memory expansion card.  
Z Ram.

RamWorks or RamWorks II  
MegaRamplus or SprintDisk  
MultiRam

On booting the RAM Enhancement kit a menu is shown which allows selection of accessories for autocopy.

Number 2 on the menu allows ProDOS file autocopy - the user must type in the full Path name of the file to load. This option is required for loading some accessory data files (eg logonmac.pp is the communications phone directory and appointments.pp is the calendar data file).

Step 3 is to set up information about the Ram card. Which type you are using and the size of RAM drive you require. (A table at the back of the manual gives Ram disk size versus AppleWorks desktop size to help determine this).

Once done, the RAM parameters are installed onto the copy of AppleWorks that has PINPOINT already installed on it.

Boot AppleWorks and all the accessories are copied to RAM for instant access.

## Conclusion

In general the PINPOINT package has been put together well, although from a personal view I would have difficulty in finding a use for some of the accessories. Notepad and Appointments for example, I normally keep a very good Diary.

The manuals for PINPOINT and the Ram Enhancement kit are well laid out and easy to follow.

Although PINPOINT works from drives I would say that a 512K Ram card is necessary to avoid the obvious delays in disk access times and in the numerous disk swapping operations that would be inevitable whilst using the accessories.

All in all a good buy for all serious AppleWorks users.



**PINPOINT 2.0** and the **RAM Enhancement Kit** was supplied for review by and is available from:

**Bidmuthin Technologies,**  
P.O. Box 264,  
Harrow, Middx,  
HA3 9AY

Tel : 01 907 8516.

# The Serial Interface- 2

## Is this communicating ?

### Dougal Hendry clears up some more Serial problems and concentrates on the Modem.

In a previous article, I considered the requirements for making a physical RS-232 serial data link between two devices. I also mentioned character formats and software handshaking. This time, I will show how these tools are used in linking different computers, but first a couple of other short points and a request.

The request is for information. Byte in December '86 carried a review of 23 American modems. It concluded "The rigorous testing ... revealed differences between modems that simple 'use testing' did not find." The reviewer had access to laboratory equipment for introducing precise and reproducible separate "Handshake" wires which are used to temporarily stop the flow of data. But for a successful link, all of the following conditions must be correct for the entire link up - Data rate, Data (character?) format, Handshake method and Cable wiring.

It is important to note that it does not matter what is "hidden" behind this interface, neither unit need know, as long as the partners abide by the same rules.

This leads to the first method of computer communication, hard wired direct connection. Once the Essential Conditions have been satisfied, data can be output from the serial port of one, along a few feet of cable, and into the serial port of the other. This method is commonly used for "porting" large files between computers using incompatible disk systems. Maximum data rates can be used because of the lack of interference noise on the link. (Once you have tried this, using nothing more than Applesoft/Dos IN# and PR# commands, you may begin to realise what a Communications Program must do...)

At this point, let us note that printers usually only accept ASCII characters, which can be expressed in 7 bits, but computers may be required to swap 8 bit data, (whole bytes), and so the data format needs

to be set appropriately. Also, character data can be error checked by reading, but that is inadequate for anything other than printable characters.

Remote Communication most commonly means use of a telephone connection between the machines. The serial port to telephone interface is a modem, (**modulator/demodulator**). Of course, a modem is needed at each end of the 'phone line! The output section generates different audio frequencies, (af), in response to high or low input data bits. The output is AC electricity to the phone wires for a "direct connect" modem, and sound for an "acoustic coupler" which squawks into the telephone handset. The input section uses audio frequency filters to discriminate between the tones, and accordingly outputs high or low bits to the computer. Note that acoustic modems are prone to interference from room noise, and the hi-fi inadequacies of telephone microphones and earphones.

These af signals carry the data, but what of the handshake signals? The answer is that hardware handshaking is used between the computer - or terminal, and it's local modem, but software handshaking must be used to the remote system.

This brings us to the confusing term "Duplex". So far we have always included a simultaneous receive and transmit channels. This means they can use "Echoplex" operation, whereby the remote system echoes back everything it gets. Thus the connection between your keyboard and screen includes the remote system. It provides a direct indication of the quality of the circuit, but it may seem sluggish... double letters (ddoooublllee) are a sure sign that you ought to be in echo mode, but aren't!

So how can we get two independent data channels on one 'phone line? Male and female voices on a phone line can be easily distin-

guished by their pitch, and modems use the same trick. One modem transmits high pitched tones, the other low tones - which is which depends on who originated the link-up.

The precise frequencies for originate and answer at each of the various standard speeds are specified by an international committee, the CCITT. The USA have different tones, specified by the Bell telephone system. (By the way, "tone" dialling in the USA uses a completely different set of tones to the UK.)

The most common data rate of 300 baud, ("CCITT V21") is pretty slow compared to the speeds used with hard-wired direct connections because of the limited bandwidth of a phone line. Bandwidth is simply a measure of the data throughput capacity (or requirement) of a communication channel. A massively greater bandwidth is required for a TV signal than Morse code. The bandwidth offered by a BT 'phone line is simply not quite enough for two channels of 1200 baud with the Frequency Shift Keying method, as described above.

Where communication is going to be predominantly in one direction, a greater bandwidth can be allocated to that direction. This is the basis of 1200/75, ("CCITT V23"), used most notably by Prestel. You receive data fast, at 1200 baud, but transmit slowly at 75 baud, tolerable for slow typing and perfectly adequate for tapping in page numbers. It is important to note that this requires either a "split-rate" serial port - unusual, or a "speed buffering" modem - not the cheapest. The former is self-explanatory, the latter holds your 1200 baud outgoing message in a buffer store and slowly spools it out at 75 baud - you'll need a hardware handshake to warn you when your buffer is full! Incidentally, Prestel itself uses non-ASCII graphic and colour ("Viewdata") characters, so you will need the appropriate software to handle that too. And being peculiarly British, don't expect it to be an option on any US software...

1200 and even 2400 baud full duplex is possible on an ordinary BT line by encoding the data using Differential Phase Shift Keying, rather than FSK. The standards are called CCITT V22 and V22bis. The bad news is that suitable modems cost more than double the price of those offering just V21 and V23. Good news is that the yanks use V22bis for their 2400 full duplex standard, and with standardisation comes economy.

I have heard of a new way of us-



ing 1200/75, using a special "Over" protocol to swap to 75/1200, thereby faking 1200 full duplex. Does anyone know any details?

Protocols. The necessity of error checking in non-character files has lead to a number of file transfer protocols. One does not need to understand their inner workings, but both Xmodem, also known by the name of it's inventor Ward Christensen, and the newer Kermit are commonly used. Both were established by being placed in the public domain. There is a special Macintosh variant of Xmodem, called MacBinary, which handles Icons and Resources. You should have guessed that we need to use exactly the same protocol at each end. These protocols should be offered by good comms software.

The other feature that is often trumpeted is terminal emulation. This is mainly the ability to respond to screen control codes in the same way as a named terminal, typically Digital Equipment Corp, ("DEC"), VT52 and VT100. This emulation is required for screen formatting and chunky graphics. If you plan to log on to your company's mainframe from home, then this might be needed. Almost all public systems

work well when you emulate a simple teletype terminal (TTY).

Software features that I, personally, have found most useful are simplicity of reviewing text scrolled offscreen, automatic archiving of the complete transcript and the ability to easily upload my pre-prepared text, without having to close any other file. I am still discovering the usefulness of Red Ryder's command scripts, but can see that such a feature would be essential to serious users performing routine sequences, for example collecting their (electronic) E-Mail.

British Telecom's "Gold" is the premier E-Mail system in this country. Apple 2000 offers free membership of this, and much has already been written on the subject. "May the Force be with you!"

In the States, there are similar systems - notably CompuServe and The Source. Their British members can reach these, either by dialling the USA and using Bell modem tones, or dialling a Packet Switching node - a computer in Britain linked to the US computers among others. In this case CCITT tones would be required, since the modem you are calling is in the UK.

On-line information sources can

be found on the E-Mail systems, Prestel, and on their own dedicated systems. Regrettably, these systems are frightfully expensive to use. Do any of them offer "amateur" rates out of office hours?

The Americans call public noticeboards, of the type you might see in supermarkets, "Bulletin Boards." When a modem-equipped computer was programmed to receive, store and display similar short messages from all-comers, they called it a bulletin board, and the name has stuck. These dial-up computers contain messages ranging from things you might not be surprised to read in academic journals, to things that would surprise you in a 'phone box at Kings Cross station! Most boards are free. However, most are for one user at time, so that you may hear many engaged tones before you get through.

BABBS, Apple 2000's own board is an excellent place to advertise your computer sales and wants, get information, leave messages for me...

The single best tip I was ever given is to run a stopwatch on your connect time. Those minutes will slip by too easily, unless you can clearly see the money running away. 🍏

# FORMAT-80 USERS

If you are using a PC compatible computer, FORMAT-PC offers you the same ease of use and power that you currently enjoy with FORMAT-80. There are generous discounts for registered FORMAT-80 users, and a conversion service for text and mailing lists is available. For more details contact :

Elite Software Company  
4 Hawthylands Drive,  
Hailsham,  
East Sussex,  
BN27 1HE

Tel: (0323) 845898

# Letters to the Editor

Peter Arnold  
Channel Islands

Dear Apple 2000,

I'm having problems with OMNIS 3+

Of all the simple tasks one might set, surely printing address labels should be easy? With AppleWorks and a IIc there was no problem at all, except that to sort by surname one had to add a code. With Omnis, great heavens! You must set up a library, a file format, a data entry layout, systems for sorting, searching, parameters, customised menu, sequences, then to print anything you go through a similar rigmarole all over again, and heaven help you if you get anything wrong because it beeps, but does not tell you WHAT you got wrong....well, after all that, and after finding that I had to look up the meanings of all that stuff about paper sizes (US letter, US legal, Computer paper and so on) in MacDraw!... there still seemed to be no way to tell the printer that I wanted it to print in nice readable type at 6 lines to the inch, and to start the next address 1.5 inches below the start of the first. You just can't get at it, and the manual! Well I asked my dealer, but he said "Oh no, don't put spaces after the address to add up the usual nine lines. Put the section heading 'End of Report' immediately after the last line of the address". "Then how does the printer know where to put the next address?" "Oh, put that as New Page" he said, "Thanks" I said lamely, and put down the phone. I've never seen anything about New Page, I mutter to myself, now quite resigned to continuing all the address labelling on my IIC, but not liking to be defeated, I turn to the thick and expensive book 'The Complete Guide to Omnis 3

It tells me how to print three labels across, and how to fiddle about with the number of columns until addresses are in roughly the right starting place on all three. Now what does dear Donna say about lines per page? Standard 66, she says for an 11" page. "Sorry dear, our's are 12" pages", not that that should affect things when printing labels, which are spaced uniformly across the perforations. No, I'm stuck. So let's see what happens when I print to the screen. One address comes up, but for this test I entered twelve. Try again, this time on the Imagewriter. It tries to do the same, but the paper snarls itself up on the left. "Never had this sort of trouble with my old Epson MX80, and it didn't

form-feed unbidden as the Imagewriter seems to do". Check the file in 'Enter data'. Yes, all the addresses are there. Have I messed about with File Format and not reorganised? No, 'No reorganisation necessary' it says. Well, I have to admit that for the moment I'm baffled, and the depressing thing is that my other files are far more complex, and extensive, but then they do not need to be printed on address labels, so I don't anticipate any problems there.

'Oh have a rest! Try out the new 'Cricket Graph'....this looks great fun. Try the example with 'column graph' and do what they suggest with the Y axis label. Double click it and type 'Sales (Millions \$)'. Hello, what's happened. The space bar functions like the Return key, the Return key is /, so where is the Space bar? Ah! the new Space bar is the Enter key, just to its right. So let's try again. Double click on the vertical label and type the new name. Sale...Enter key...(nillioBs \$)...that's got it. All the same, it is a bit of a nuisance having to mentally re-label the bottom row of keys, Return, Enter and Space bar, and one wonders what else does not work as it should. I'm glad I have only borrowed these programs. MacDraw surely does what it should. Try it.

All's well up to page 14, but what's this? Select an object ... right, here's a nice big rectangle, now select the Text Tool, and type, and the words should wrap when they reach the edge of the rectangle and carry on to the next line. Do they? No they do not. Then why in heaven's name print in the manual that they do? (My dealer also says that don't)

What's up Apple? The chatty style in manuals is only mildly irritating. The paucity of the index aggravating. The total lack of any systematically arranged information on hard or software seems bound to lay tremendous burdens on dealers (and user groups).

Yes, one can drag icons around in less time that it takes to do the equivalent key strokes on an Apple 2, but not if you put them into macros. Even my IIC, with macros, can knock spots off my borrowed Mac on all the elementary office work. Yes I suppose it took a while to get used to the IIC and AppleWorks after a II+ with Zardax, Visicalc and Visidex, so if I can find someone at Apple 2000 to give me a bit of help, maybe I will eventually buy a Mac, but not as things are..

New Barnet - Herts

Dear Sirs,

I am a fairly recent member of BASUG and new to programming of any sort. Nevertheless I have been working hard on an Applesoft program to handle the very complicated routines required at a Hire Desk. (Peter runs a tool hire company Ed)

Although the program is not yet 'up and running' it soon will be and I have every reason to believe it will achieve all the aims I have set.

I write to acknowledge unreservedly the unfailing assistance provided by Dave Ward of the Hotline. He has been quite superb, and aside from his tremendous actual know-how, he has assisted me frequently and patiently with the minimum of fuss. If he found my IQ lacking sometimes (and he must have) he never allowed it to show. It is not untrue to say that without his help I would have given up some 9 months ago.

Peter Edwards

Another of Dave's satisfied customers! ....  
Ed

Thorpe Bay - Essex

Dear Mr Panks,

I joined your club when you were at Olympia; I was in a wheelchair and we spoke at the Apple2000 stand. I also met at the exhibition Ewen Wannop and we talked of some of the problems I had encountered with my Apple II Europlus and as I explained I use a specially developed expanded keyboard which I use with my feet. I have twin disk drives of the large version and a normal monitor with printer.

Due to my financial situation, as I am unable to work at present due to my disability, I am unable to expand my Apple computer any further. Ideally, what I would like to do is to be able to expand the memory to a 64K level and additionally an 80 column card would make it easier to use on Apple Writer. I understand that there is a feature on the Spectrum which allows you when entering a long program to shorten this laborious process by touching keys which represent certain words, i.e. E for Enter, N for Next. I would ask whether somebody can write a machine code program to assist me with this problem. Failing this a program which allows voice input. Also I would like to convert my colour TV into a colour monitor. Would you know of anybody who wants to sell a second-hand card?

Hugh Slater

There must be lots of spare 16K RAM, 80 column, and PAL cards around - any offers to help out Hugh? A keyboard macro program would solve his other problem - any suggestions of which would be best?  
Ed.





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
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**DO NOT** use ProDOS version 1.3 on the GS. It has a number of bugs including unnecessary multiple polling of drives, and can trash disks. Use instead a version of ProDOS 8 from any true GS application disk.

### Inbuilt Tool Handler - Try this!

For those interested in poking around inside the GS you may like to have a look at an inbuilt toolkit handler. From the prompt ]

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**0 - e**

**FF/1800x <CR>**

**O-A Ctrl Esc**(together)

and select it from the menu.

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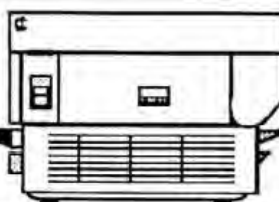
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Misc	6809 Co-Processor	II	30.00
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# PHANTASIE II

## Angela Wright takes time to look at the first of the SSI simulations and fears that it could break up marriages !

As its title suggests, 'Phantasie II' is the sequel to the enormously successful role-playing game 'Phantasie'. However, unlike many other computer role-playing game sequels it is not simply an extra module designed for use with the original game, but a separate game in its own right, which can be played by novice adventurers and expert 'Phantasie' addicts alike.

The objective of 'Phantasie II' is to locate and destroy an orb, fashioned by the dark lord Nickademus, which has cast an evil curse on the island of Ferronrah, and enslaved its people. To achieve this end, the player (or players, as it is possible for up to six people to play at any one time) must assemble a party of 1-6 adventure characters (1 if your party is suicidal, 6 if you actually want to have a stab at finishing the game), who can be selected from 6 categories of race (such as human, elf, gnome, etc) and 6 categories of profession; thief, fighter, monk, ranger, priest or wizard.

As it is generated, each character is given a set of attributes, which vary according to his/her race, profession and age - an older character tends to be much weaker than a younger character of the same race and profession. It is advisable, if you don't already have 'Phantasie', to generate a large number of characters before you begin to play, as it is easier to exchange a dead character (novices are bound to find themselves with large numbers of these at first - I did !) for one off the roster than it is to generate new characters every time one is killed. For those of you who do possess 'Phantasie', a facility exists which enables you to transfer any characters used in that game to 'Phantasie II', although such charac-

ters lose most of their money, experience, points and other items in doing so.

Your party starts the game in Pippacott, one of several towns on the isle of Ferronrah. When in a town, characters can purchase training (if they have enough experience points and gold to do so

both of these can be amassed during battles), equipment and potions; deposit gold they have acquired, or rest in an inn. Although inns are also found outside towns, players must pay to use them, whereas town inns are free - it is better to use town inns and save your money to pay for training, as the 'independent' inns do no more for characters than those in towns. Both types of inn raise the health level (hit points) of adventure characters to their maximum level, and may increase the magic points of spell casters. The less training/experience a character has, the more often they will have to visit inns if they want to survive.

Once outside the town, the player is confronted with a feature common to many S.S.I. games - a map (or rather, a segment of one - there are several different map segments to be explored) which allows for a bird's eye view of the movement of the party. This occupies half the graphics screen at any one time, whilst the other half is taken up with a panel showing small graphic representations of the members of your party. A small text panel at the base of the screen is a command menu, showing party options during movement. I personally prefer this method of controlling movements over the more usual text-driven systems for graphics adventures, because they are simpler to operate and allow for a much faster game.

The 'Phantasie' system of fighting battles is also a great improvement on other games. When monsters are encountered, a message stating this appears in the text window, and the screen is then replaced by a text display showing the conditions of your party, the type and number of monsters encountered, and a menu giving encounter commands (such as fight or flee, etc). If the party elects to fight, it is then given the option to choose the method of battle each character will adopt (this is reselected each battle round), and battle begins, during which the display alternates between text and the graphics screen, the left-hand section of which now shows the party doing battle with the monsters described in the text window. When a monster or adventurer is killed, it disappears, making it easy to see how well the battle is going, whilst the text window at the bottom of the graphics screen shows who is attacking, whether they hit their opponent, and how much damage they cause if they succeed.

In 'Phantasie II', even dying is fun, as the death of the entire party results in the appearance of an animated display showing monsters jumping over the corpses of the slaughtered adventurers - this is amusing at first, but if frequently experienced it cloy a good deal, as the sequence continues for longer than it needs to, and there is no way of bypassing it. After this, the party 'arrives' at the astral plane, where an incredibly silly-looking Great Demon decides the characters' individual fates' - each character can be resurrected, granted undead status or destroyed for good. Those who survive are transported to the netherworld, where they continue to explore until they are again killed. Once all characters have been destroyed, the game is over - at least it is supposed to be. On the review copy of the game, there is no routine or sequence for ending the game - the now non-existent party continues to travel between the astral plane and the netherworld until the player (ie yours truly) gets thoroughly bored with the whole thing and switches the computer off.

Another bug I've discovered, which is almost (but not quite) as annoying is the adamant refusal of the game to give my party a score - regardless of how many monsters I've caused to bite the dust, the number of dungeons I've explored or the levels of training of my characters.

*continued on page 26*





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Printrix comes with 43 fonts, 25 pieces of clip-art; automatic italics, boldface, and underline for every font, complete control of justification and margins; the ability to print graphics right along with the text; and full colour control on ImageWriter II & other colour printers, for both text and graphics. It runs on the Apple IIGS, //c, & //e with extended 80-column card. A huge list of printers & printer interface cards is supported.

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## Phantasie II

*continued from page 26*

It may just be this disk that's faulty, but I'd advise anyone considering buying the game to ask for a demo first, to see if other disks carry the faults I've described.

One final piece of advice is to ensure that you save the game every time you leave a town, as 'Phantasie II' does not save any changes in condition or training of a party as they happen, and turning off the computer without first saving the game (this can only be done in a town) may result in the loss of any recently acquired experience points and equipment.

Despite its faults, I have concluded that 'Phantasie II' could be blamed for the "break up of marriages" - after a certain amount of play it tends to become addictive to the point where the player finds him/herself still beating up dragons at 3 o'clock in the morning. It has an advantage in that it allows for greater expansion of characters than most other games of the same genre - the more training a character has had, the better their overall performance, and the higher their chances of survival as a result. I have played on and off for over 20 hours, and still have not managed to explore half of the map - at some stage the party is supposed to find a way into the netherworld (preferably without getting killed in the process, as I don't think dying is necessary to win the game...) - I haven't yet managed this feat, and probably won't for many hours yet.

I found the manual helpful, although it is primarily written for 'Phantasie', with an appendage outlining the differences between the two games - at times I found it confusing to read in the manual that I was on a completely different island to that described in the game itself - it is worthwhile to read the manual before playing, to pick up the hints it contains.

This package should be available through most dealers or failing that try MGA. No price was given.

Watch out for more in the series of SSI Simulations. We will be featuring at least one in each issue.

The next issue will contain Warship.

# PINPOINT SPELLING CHECKER 2.0

## Nigel Bradley checks out his spelling with this useful addition to the Pinpoint range of AppleWorks utilities.

The PINPOINT spelling checker is an addition to the PINPOINT desktop accessories. As the name implies it is used for spell checking AppleWorks word processor documents. It can be used in different ways:

1. Word checking
2. Paragraph checking
3. Document checking

Other options include summaries of the checked document or paragraph, sound, and word count. It can be made to offer alternative spelling suggestions for any word it finds wrong.

Being typically American it will find quite a few unacceptable English words, e.g. colour, defence, labour, favourite etc. This presents no real problem due to an Auxiliary dictionary that can have words added to it. REMEMBER to save this or you lose the added word(s).

### Getting started.

The spelling checker arrives in a well padded box with plenty of colorful wrapping, a well written manual and a double sided disk.

On boot up a small graphic demonstration of what spelling checker can do, greets you. A menu then appears. This menu offers the user the facility to install the spelling checker on to the original PINPOINT accessories.

Step 1 is to set the word processing type i.e. AppleWorks version 1.0, 1.1, 1.2, 1.3, 2.0.

Step 2 sets default options to either word, paragraph or document checking. Set sound on/off

Step 3 is to install the spelling checker onto the original PINPOINT disk as per instructions on screen.

Step 4 re-install PINPOINT onto the AppleWorks disk as described in the PINPOINT review elsewhere in this magazine.

Step 5 Re run the RAM Enhancement disk to enable the new file Speller.pp to be loaded along with AppleWorks.

Note: The file SPELLER.PP should be moved onto the accessory disk. Remove the three AppleWorks word processor files on this disk to make room. They are Building note, Report and Ram.install.

If you require the Main and auxiliary dictionary files to be copied to the RAM drive at startup then these must be specified in the ProDOS autocopy selection on the Ram Enhancement disk. Another file that is needed although it is not in the manual is PSCINST.SYSTEM and again this must be typed in at the ProDOS autocopy stage of the set up.

The dictionary files are about 100K in size and therefore you must make sure that the specified Ram drive is large enough to hold them. Also be prepared to wait for a while on startup to allow these to be loaded.

### Using the spelling checker

Make sure that a file is on the desktop and select solid-Apple-P, select spelling checker from the pull down menu and a brief message 'Installing spelling checker' will appear (if you have not copied the file PSCINST.SYSTEM to the Ram drive then the program will ask for the disk containing this file to be placed in a drive).

Once installed, spelling checker will tell you that solid-Apple-P will start the spell checking routine and solid-Apple-M will allow alteration of the default modes or return to desktop accessory mode.

In use the spelling checker is handy to spell check a word that you are unsure of or if some bright



spark comes up behind you and says 'that's not right'. It will check the word and offer up to ten alternative spellings should the word be incorrect. Pressing 'esc' will continue without modification or the word can be added to the auxiliary dictionary.

If correction is made from one of the alternative suggested spellings it is quite impressive to see the old word rolled off the screen and the new word rolled back on. As stated earlier, it is important to save the auxiliary dictionary AUX.DICT.S back to disk before switching off. This is best achieved by creating a word processor file from an ASCII text file from RAM and printing it to disk from the AppleWorks print option menu. Next time the dictionary files are loaded so will your newly added words.

As the spelling checker gets to work it checks the words against the main dictionary file, a considerable delay is noticeable if the word cannot be found as it switches to the auxiliary dictionary. This happens fairly frequently at first as the English words differ from the Americanised spellings (stated earlier).

If you require Document checking, then be prepared to watch the spell checker in operation and prompt it along by adding the incorrect words or by pressing esc. It would have been far better to have the document checked and a list of wrong words shown at the end. Also an English dictionary should be available on the versions of Spelling checker sold in this country.

## Conclusions

All in all I found it quite slow and laborious to use for document and paragraph checking and would only use it for checking the odd word or so. I also lost quite a bit of time on installation before realising that the PSCINST.SYSTEM file was required to be loaded to RAM. This should have been stated in the manual. It actually took 12 minutes 27 seconds for this review to be spell checked in document mode.

PINPOINT Spelling checker was loaned for review by and is available from

**Bidmuthin Technologies,**  
P.O. Box 264,  
Harrow, Middlesex,  
HA3 9AY.  
Tel 01-907-8516

# LETTERS to the Editor

## TECHNICAL INTRODUCTION TO THE CORTLAND

By Allen Watson

Notes on Beta Draft By V.C.Jones

### Summary

An excellent introduction to APPLE IIGS technology. The clarity of the writer's style is wholly enviable. There was no part of the draft where I felt that I needed another reference to help me understand what the author was talking about.

### Main Notes on the Draft

1. I entered the draft, originally, seeking more than it has been intended that this introduction should give. Namely, I wanted to be taught how to DO things with the Apple IIGS. I was therefore, initially disappointed but, very soon, it became clear that I needed to read the contents of this Introduction before I even attempted to read the other books in the system.
2. The author's style made it very easy to understand.
3. The layout was good. I particularly appreciated Chapter 1 where early reference was made to Appendix A "Roadmap to the Cortland Technical Manuals". This appendix was particularly useful in laying out the references necessary for the understanding of the IIGS. The details of the contents and uses of the references is essential to anyone who wishes to do more than use dedicated software.
4. Chapter 1 also contained useful explanations of the ways in which the IIGS fits in with the existing APPLE range. It explained the roles of the Programmer's Workshop and the IIGS Toolbox and introduced the available programming languages.
5. It is difficult in an introduction to cover the ground fully without blowing up the introduction to the size of a twelve volume encyclopaedia. This difficulty is apparent in several places in the draft. For instance, on page 46, the new commands for the Monitor are mentioned, indeed their functions are listed. The commands themselves, however, are not. This is not a criticism. An introduction should not get too deeply involved. Never-

theless, at that point, I badly wanted to know those commands and the ways in which they could be used.

6. I found the information on the Mini-assembler useful.

7. Chapter 5, on the Cortland Toolbox was of great interest to me. I, of course, wanted to know more, much more, but the Introduction served its function well.

8. Details of memory mapping and shadowing in Chapter 6 I found most useful. As a previous APPLE II+ user I also found the Chapter 8 information on APPLE II Compatibility of great interest. Having tried to enhance an existing programme or two I am not too sure that it is all that easy to do. Of course, I might well also have found some difficulty with modification of my APPLE II+ database programmes to use on a IIe. Use of disk files seemed rather different and I had to make rather a lot of alterations before quite simple things would run.

9. I was particularly interested in the paragraphs in Chapter 7 where the Mixing of Environments was discussed. I did not know that it was possible and will be greatly interested in finding out how to actually access some of these routines from the 8-bit APPLE II programmes.

10. Without access to either an assembler or the Programmers Workshop I cannot comment on Chapter 9 except to say that, again, it provides useful introductory information. After reading it I at least know that I am going to need an assembler and a copy of the Workshop if I want to do any serious programming with the new computer.

11. I found Appendix A to be most informative. Appendix B is a handy summary. The Glossary I accept to be standard practice but I am afraid that I can take it or leave it and do not expect to have to use it more than a couple of times, ever.

12. In conclusion, a good book which properly fulfils its introductory purpose. I wish that I could write as clearly as the author. It has whetted my appetite for more detailed information concerning the APPLE IIGS and that is exactly what it was intended to do.

# So you thought you knew about Apple !!

## THE ULTIMATE APPLE TRIVIA

1. Name the first store where the Woz and Steve Jobs sold the first Apple I - and the city it was in.
2. In what three countries does Apple manufacture its CPU's ?
3. What was the price of Apple stock at the first public offering ?
4. What were the smallest and largest random access memory sizes available on the first Apple II ?
5. Name another processor that could run on the Apple I.
6. What model of Cray Supercomputer resides on the Apple Campus ?
7. Cray is a more colourful company than you might think. They are willing to paint their supercomputer in any one of 52 bright, soothing, or boring colours per their customers specifications. What colour, not on Cray's palette, did Apple choose in creating the first custom colour ever painted onto a Cray ?
8. Name the high school and city where Jobs and Woz went to school.
9. What was the name of Apple's first private-label printer ?
10. What everyday office function were Apple employees once forbidden to do while standing up ?
11. The Cray's home requires two huge air conditioners to keep things cool. Within five tons, what is the weight of each of these two air conditioners ?
12. How much did the 6502 cost when it was first introduced ?
13. What is the "Caps Lock" key on an Apple III called ?
14. What colour was the case of the Apple I ?
15. What "standard issue" office equipment was banned from Apple by President Mike Markula in 1981 ?
16. As of December 1986, approximately how many AppleTalk networks were in place? (within 30,000 units).
17. Name the Apple III data base program that evolved into the integrated Apple II software package known as AppleWorks ?
18. "BIT" is a contraction of which two words ?
19. Name the four colours that were available in hi-res graphics on the first Apple II.
20. What is the name of the Japanese operating system for the Macintosh ?
21. In what year was the one millionth Apple manufactured ?
22. Where was the Apple II introduced ?
23. Which company did Mike Scott, a president of Apple come from immediately before joining Apple ?
24. Name two Apple computers that were announced on the same day - not including the Macintosh II and Mac SE.
25. How much faster does MouseText scroll on an Apple IIc than on a Macintosh ?
26. Name the video game Woz wrote for Atari in 1974.
27. Name the first show that Woz and Jobs travelled to on behalf of Apple.
28. What product marked the first attempt to make an Apple product MS-DOS compatible ?
29. What memorable slogan became the battle cry of the Mac division ?
30. What breakthrough product did the developers Bricklin and Frankston bring to market ?
31. What's the slogan on Woz's licence plate ?
32. The mouse, or "rodentiometer", as it is known technically, was invented by whom - Doug Engelbart, Steve Jobs, Alan Kay, Jef Raskin, or Larry Tesler?
34. How old was Steve Jobs when he became Chairman of the board ?
35. On what date did Woz crash in his airplane at the Scotts Valley Airport ?
36. At what venue was the Apple II introduced ?
37. Who was in charge of design on the Apple III project ?
38. Chuck Peddle designed the 6502 and the Commodore PET, in what year was he hired by Apple ?
39. When did Apple begin shipping their first disk drive ?
40. What was the theme content of Apple's original logo?
41. Who is/was Captain Crunch?

4

27. PC 76, in Atlantic City.
28. The Rana Box.
29. "90 hours a week and loving it"
30. Viscalc.
31. Apple II
32. Doug Engelbart, 20 years ago at the Stanford Research Institute.
34. 26.
35. 7th February, 1981.
36. National Computer Conference in Anaheim, California.
37. Wendell Sander.
38. 1978.
39. June, 1978.
40. Newton and the Apple.
41. John Draper.

13. Alpha Lock.
14. Colourless - the Apple I didn't have a case !
15. The typewriter.
16. 200,000
17. Quick File.
18. "Binary" and "Digit".
19. Black, White, Purple, and Green.
20. KanjiTalk.
21. 1983.
22. At the West Coast Computer Faire, in San Francisco, in 1977.
23. National Semiconductor.
24. Lisa and Apple IIc, or, Macintosh and the Lisa 2.
25. An Apple IIc scrolls MouseText 20% faster.
26. Breakout.

1. The Byte Shop, in Palo Alto.
2. Singapore, Ireland, and the United States.
3. \$22 per share.
4. 4k and 48k.
5. 6501 (or 6800)
6. Cray X-MP/48.
7. Purple.
8. Homestead High, Cupertino.
9. The Silentype.
10. Talk! It got too noisy, as offices were separated only by five foot cubicle walls.
11. 20 tons each.
12. \$25, the 6501 competed with it at \$20.

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APC3	36	3	£85
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IPC3	250 (IBM)	3	£80

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# Inside the Macintosh II

## Dougal Hendry dives into the Mac II and finds some powerful features.

The Mac II's improvements include speed, colour, hardware slots and a Mac+ compatible, open-ended system design.

With the Mac II, Apple and third-party developers can expand the machine, even in directions that are presently inconceivable.

About the only quibble with the machine is the lack of multitasking, and that will probably be remedied once Motorola's 68851 memory-management chip becomes available at a reasonable price.

### Compatibility

The Mac II is claimed to support "most" existing monochrome Mac programs, and those few programs that use the existing fixed-color capability of QuickDraw. It was a pleasant surprise to see just how compatible it was, and that still further improvement was one of the final development aims.

As before, developers who have stuck to the published rules are rewarded by a reduction in follow-through costs. It seems that the established companies are learning, and major, modern programs performed brilliantly. Interestingly, at the time of writing PageMaker 2.0 was giving problems, while 1.2 has been the cause of some of the most lustful enthusiasm at Apple's demonstrations. More, MacProject and Excel were Apple's prime choices to show off the new machine.

This smooth transfer is possible because of the fundamental structure of the Mac's system software, (modularity and the use of high-level function calls), and because the new features have mainly been added as extensions and alternatives to existing modules. (One special

exception- poor old MacPaint is not compatible, but then, it was written before any of the rules!) It is good to be able to report that Apple seem to have been very closely involved with registered developers during the period between announcement and release. There has been genuine assistance to help

### Processing speed

The Mac II comes with a Motorola 68020 processor running at almost 16 MHz, exactly twice the clock speed of earlier Macs. The 68020 is a true 32 bit processor. All the 68000 series use 32 bit internal registers; this one has a 32 bit external data bus as well. The result is about a fourfold speed improvement, before considering any other changes. (Since this chip has instruction prefetch and caching, the exact speed depends on the program layout.

Motorola quote sustained rates of 2 to 3 million instructions per second, with 8MIPS in bursts.) It also supports virtual memory operations, (treating hard disks as extensions of RAM by signalling so-called "page faults", interrupts requesting access to segments not currently in RAM), although if this is used by Mac system software, it was not apparent to this writer. By the way, the chip crams 200,000 transistors into an area just 350mm by 375mm.

A 68881 floating-point coprocessor is fitted as standard. This is a chip dedicated to doing extremely rapid arithmetic with 'real', floating point numbers. Apple have already documented their "SANE", (the Standard Apple Numerics Environment - ready-to-use maths "subroutines" in the System file). The

presence of the '81 speeds up the SANE routines by between 3 and 30 times, compared with using only the processor. This benefit is therefore available automatically for all 'well-behaved' programs, although programs which naughtily access the 68881 directly could do their maths even faster.

### Slots

Mac II has six "Apple NuBus" slots; a card to handle the screen output occupies one of them. These slots potentially allow you to extend the Mac II's hardware with co-processors, communication cards, extra memory and other add-ins.

NuBus is a 96 way connection standard, used in some minicomputers and "slightly adapted for micro-computer use" by Apple. The significant differences between "Apple NuBus" and anyone else's seem to have been glossed over. Apple require specific contents of the 'configuration ROM', they do not supply one of the power supply voltages and they select a specific set of options within the standard. It seems as though any Apple card should work on any standard NuBus - but not vice versa.

The 32 bit data transfers, at 10MHz, between cards require detailed handshake processes, rather like the IEEE 488 bus, (a standard for connecting intelligent test equipment). Since the bus is asynchronous, access to "slot memory" will be slower than motherboard memory.

Cards can take turns at controlling the bus. The 68020 motherboard acts in this respect as though it were another NuBus card, so that it is possible for an add-in NuBus card to "take over" the system, although the motherboard can "lock out" others should it need to.

The 32 bit address space of the NuBus is processor memory mapped in a fashion which brought to mind Apple II slot memory mapping, although the scale is quite different.

The cards are physically about the same size as IBM PC cards, although being more complex and initially made in relatively small quantities, I fear that they will be much more expensive. I see no prospect for any magazine articles on Do-It-Yourself NuBus cards.

The Mac II's memory is expandable to 8 megabytes on the main board, with currently available chips, and much more could be added



using the NuBus slots.

AST has already announced a PC AT compatible computer on two Apple NuBus cards, which gives the Mac II an MS Dos capability and multiprocessing. Although not yet fully ready, this was demonstrated at the Mac Expo in Rotterdam. (AST's demonstrator was a PC man. He didn't know why they were running under Servant, or how to change Small Icons...)

As well as the 6 NuBus expansion slots, the motherboard itself supports two Mac+ standard 800k floppy disk drive ports, a SCSI with internal and external connectors (for hard disks, etc), 2 Mac+ Mini-8 serial (RS232/RS422) ports, and two Apple Desktop Bus (ADB) connectors (for mouse, keyboard and other slow human inputs). The fan-cooled, PC-sized box has room for either the second floppy drive or a 20, 40, or 80 megabyte internal hard disk, and those NuBus cards.

### Multi-User, Multi-Tasking, Multi-Processing...

Multi-Tasking is the description given to a CPU which shares its time between various different jobs. One of the tasks must schedule, and regulate the others. Mac system software was designed from the first to be single, not multi tasking.

The 68000 has some instructions reserved in a "Supervisor Mode" to help protect a supervisory program and help it to regain control from a wayward, or crashed, co-resident "User" task. The Mac uses supervisor mode indiscriminately. Fine for a 128k single user appliance. A right royal pain now. It could be argued that Jobs deserved to be fired for this one decision alone.

The use of a hardware Virtual Memory management chip opens up the possibility of a "super-Switcher" although we must wait and see what Apple actually offer. (My guess is that this is where Servant development is heading.) Print spooling is the most obvious candidate for a concurrent task. It seems incredible that Apple's print spooler requires a hard disk, and only works with the one laser printer. Don't even try and explain this to a PC user, who takes RAM-based spooling for granted.

UNIX is an example of a Multi-User operating system, which can allow several people - at separate terminals, to share a single CPU, and thus to share data. While the Mac II has a powerful CPU, it is against the

Apple philosophy to share it, in the same way that some folks hang terminals off an AT. The Apple way is to network many CPUs to commonly available data, and in this



respect the Mac II seems no different from the earlier models.

Multi-Processing is the use of several CPUs simultaneously, often on different parts of the same job. In the Mac II context, it will be possible to have the 68020 doing page layout while a NuBus 80286 selects and sorts a dBase III mailing list, a 65C02 looks after the screen display, another slave processor watches the ADB and the processor in the keyboard just waits for a keypress...

### Display options include colour

Screen output is handled on a NuBus card. It is therefore physically decoupled from the processing, so that both computing and display updating can be faster.

Regardless of the hardware, Mac system software has always supported displays with varying numbers of pixels or 'pixels'. (It has so far always considered the dots to be 1/72 inch apart, both horizontally and vertically.)

The whole theme of the Mac II software dealing with output devices is to generalise, and so facilitate the use of different displays, so don't be surprised to see a choice of video boards immediately. There should be no IBM-style problems, where software must actually be re-written to cope with CGA, EGA, VGA, Hercules and all the other incompatible video display cards which "compatibles" use.

In Mac II system software, a pixel's colour is handled internally

as three numbers, representing the intensity of red, green and blue, on a scale for each from 0 to 64k - that's a total of 48 bits of colour resolution. Toolbox routines exist for

such purposes as the conversion of such an ideal ("absolute") colour into the nearest real ("concrete") colour which a device is actually capable of displaying. It expects data in a standard format called a "gDevice record" for the capabilities of each real device.

An educated guess would be that Apple themselves

should eventually offer a 1280 by 1024 pixel display (≈A3) for "graphics workstation" applications and a 640 by 1024 (≈A4) unit for full page text or spreadsheet display.

The only Apple video board shown so far displays 640 by 480 pixels in 16 colors (or shades of gray). This is 4 bits of memory per pixel, 256K in all. By adding an extra 256K bytes of memory to the board (diy for £25?), you can increase this to 256 onscreen colors (or shades). The speed of updating the display is naturally affected by the size of the screen memory. In software it is possible to reduce the colour resolution (Apple call this "Color Depth"), so that the display is drawn faster. Apple's DA for setting the resolution is provisionally called "VidPicker". (256 gray levels at 72dpi looks positively photographic!)

Screens could be mentioned at this point. The video controller and screen need not be an indivisible pair. Indeed, I read that the standard board provides RS 170 output - this is an NTSC (american-type) signal apparently used on projection tv's and recorders. I wonder if there will be a PAL version for the UK?

The same card serves both mono and colour screens, which are actually slightly different sizes. The size of the physical tv tube can vary the size of the image displayed, but does not change the pixel resolution. In other words, how much of your document is visible is controlled by the display card, but how easy it is to see that image depends on the screen. I mention this because the (Sony) colour screen used

by Apple was so wonderful! The hardest test of a colour screen is to see how cleanly it handles monochrome, and that is something that a Mac colour screen is going to do a lot. Screens as fantastically good as that Sony are fearfully expensive and are unlikely to be standard.

Apple are said to be encouraging developers to be restrained in their use of colour. Perhaps the message failed to reach Living Videotext, whose colour version of More is positively garish.

One consequence of the video design is that multiple video display cards can be combined to create a "desktop" that spans two or more monitors. Even combined color and monochrome displays will work, and a single output window can span multiple displays. (Apple had another DA to allow the position of the screens to be adjusted.)

### Color QuickDraw

The ROM Toolbox supports the new colour representation, through "Color QuickDraw" and extensions to the window manager, etc. The design also supports the normal Mac's 1 bit/pixel screen mapping, and the existing QuickDraw capability of using three such planar-image arrays to provide eight colours - before patterning. The primary mapping is however "chunky pixels", whereby the multiple bits defining a point are grouped in memory, rather than being in individual "separations".

Color QuickDraw has entirely new "opcodes" defining such things as colour combination methods. For example former methods included 'And', 'Or' and 'Xor'; new routines offer colour addition and subtraction. One interesting point of note is that many of these modes are similar to functions of the very new and very high performance graphics co-processor from Texas Instruments, the TMS34010. This suggests that alternate video cards using this chip could give faster displays. (The time taken to redraw a complex image on a large screen is very important for the professional graphics market.)

New menu routines offer colour options and 'tear off' menus, so truly garish menus in unusual places are now a distinct possibility unless developers heed Apple's call for dignified restraint. Incidentally, menus are now said to be able to pop-up secondary menus on their right. Since this feature first ap-

peared on the Amiga, I presume that Apple have dropped their legal claims to the "Look and Feel" of a visual interface. Perhaps Xerox have had a quiet word?

### Sound

The Mac II contains a custom Apple Sound Chip that dramatically reduces the software overhead of sound generation, so that sound can be used in applications without a noticeable reduction in computing performance. It also gives stereo capability (at conventional signal levels), 4-voice synthesized sound output at up to 7.5KHz and sound sampling at CD rate.

Toolbox support has been extended to include a Sound Man-



ager, which has such things as MIDI control capabilities, even though the machine does not have a dedicated MIDI port. Apple have been talking about having raised graphics standards, and looking to do the same with sound.

First demonstrations of the new machine's sound capabilities included a control panel option to select a replacement for the system's beep alert. Personally, I preferred the chimpanzee screech, although the HAL-style "I'm sorry, Dave" had many fans. You heard it here first...

### SCSI

The SCSI in the II can transfer data at least twice as quickly as that in the Mac. Previously, the cpu had to repeatedly poll the 5380 SCSI chip, looking for valid data. I gather that Mac II allows the chip to handle the transfer handshake and then effectively interrupts the cpu only when

valid data is available. Also, slow devices- like tape drives, no longer need tie up the SCSI bus while carrying out a long operation, such as tape winding. This is achieved by supporting SCSI Bus Interrupts.

The new SCSI Manager will have the capability to partition the enormous hard disks that will soon be available, into discrete volumes for faster handling.

### Toolbox

The Toolbox ROM, containing Color QuickDraw and the other libraries of system software, is now 256K bytes long. An improved TextEdit section allows the retention of text attributes like color, style, font, and size during standard clipboard cut-and- paste

operations. The TextEdit code in the Mac II uses the same edit record as the 128k Macintosh ROM to store text, but can interpret some of the fields differently to deliver new features.

The result of this is a set of routines and data structures that is backward-compatible

with existing Macintosh software but has the ability to save a string of text with its spacing, font, size, style, and color attributes and pass it (via the standard Clipboard) to another program that can use it. For compatibility with existing Macintosh applications, Apple recommends that a software developer save text directly to the desk scrap and the old TextEdit private scrap that older programs expect to see.

Another new module is the Script Manager. This extends the Mac concept of resource separation in a remarkable way. The present scheme allows isolation of Menu and Dialog Box texts, etc, from the application program code, which permits very simple translation of application programs into other "Roman" languages. The Script Manager now permits these same programs to work with non-roman script languages - such as Hebrew, Arabic and Japanese. The Script Manager handles all details of left to right, or right to left, arabic's variable



letter shapes and all those Japanese characters, different measuring, editing and sorting styles and of course the varying calendars and number formats. Apple already have script interface files for Roman, Kanji and Arabic.

## Unix

A version of UNIX, called A/UX, will be available for the Mac II, but since UNIX is multitasking, it will need the Motorola 68851 memory-management chip.

A/UX will combine features of two versions of UNIX with the Mac user interface. It is reportedly compatible with both UNIX System V, from AT&T, and UNIX BSD 4.2 (Berkeley Software Distribution), from the Computer Systems Research Group at the University of California, Berkeley.

According to UniSoft (Berkeley, CA), the company that developed the software, A/UX conforms to the System V Interface Definition and has passed the System V Verification Suite. As for BSD compatibility, the company said that A/UX contains more than 50 BSD utilities not in System V. UniSoft's B-Net allows A/UX to interact with the Defense Department's TCP/IP protocol based on Ethernet. (When UNIX is released, there will be a NuBus card for EtherNet.)

Unisoft's Network Filing System (NFS), licensed from Sun Microsystems, allows transparent access to remote file systems and AppleTalk allows A/UX to interact with other Apple microcomputer systems.

In the past, UNIX applications developers had a small target market and no standard medium for distributing software. The new system, with its Mac interface, should be easier to use and provide a much larger market for applications developers.

Unisoft said it will be selling compilers for the A/UX operating system, including C, Fortran 77, and Pascal. They will cost \$700 each. No

information is available yet on the price of A/UX.

Apple say that "UNIX is not for normal people," and could well be right, but this OS has a vast potential for getting the system accepted in higher education establishments. Then try to tear them away from their Macs!

## Keyboards and the Apple Desktop Bus

Apple will offer a choice of 81 or 105 key keyboards. Both are rather similar to the GS keyboard.

The 'extended' version has a very attractive layout with cursor keys in a reasonable diamond and PC AT style function keys above the main group. The function keys are actually going to be needed only when using an MS Dos coprocessor. (I keep meaning to find out what can be achieved with the "Control" key.)

The keyboards can be part of a daisychain of ADB devices. Now that there is the potential to attach the same human input peripheral to the GS, MacSE and Mac II without hardware change, there really is some hope of seeing cheap digitising pads, bar code and credit card readers, and even perhaps aids for the disabled. The new system control panel is "modular" to act as an installer for the driver software.

## Personal opinion

The only major thing that is missing at the moment is good technical documentation. Apple underestimated the abilities of first generation Mac users - and then grossly overcharged for the infuriating Inside Macintosh, surely the only really badly structured Apple publication. There is to be a volume 5 for the SE system additions, but not for the II. (Does that make it £150 for the set?)

"Macintosh Revealed" has proved that this complex system can be

lucidly explained. Unfortunately, it only covers part of the 64k ROMs and early systems. Apple need a really good, top-down explanation of how to exploit the riches of the machine's system software.

Apple have already helped chosen developers with certain strategic products which cannot carry an Apple logo, but this is a far cry from helping the interested, capable but non-commercial programmer. We can only hope that ADG will press for and then deliver the goods.

## In conclusion

The Mac II has been shown to dealers, press, user groups and show-goers. The hardware seems to be production ready. The ROM software was still in final development, but the system already works well enough to be highly desirable to present Mac owners.

Price will sharply determine the penetration of new markets. The machine looks to be quite cheap to build in Apple's automated factories. I hope Apple realise how vast the market could be, if it is priced to sell.. (Eds Note: See below!!!)

# Macintosh II Prices.

Apple(UK) have announced the following bundle prices for the Macintosh II in the United Kingdom.

It would appear that the usual discounts will apply to the Education and Government Markets. So I had better hurry up and become Prime Minister !

The best deal will be to buy a bundle, you will save about 3% on component prices.

The machines are being shipped to dealers now but a shortage will exist - all supplies have been allocated until February.

### Single Floppy Drive Mono System

Macintosh II  
Internal Floppy Drive  
Hi Res Mono Monitor  
4 Bit Video Card  
Standard Keyboard  
£4495.00

### 40 Meg Hard Drive Mono System

Macintosh II  
Internal Floppy Drive  
Internal 40 Meg Drive  
Hi Res Mono Monitor  
4 Bit Video Card  
Standard Keyboard  
£5495.00

### 40 Meg Hard Disk Colour System

Macintosh II  
Internal Floppy Drive  
Internal 40 Meg Drive  
Hi Res Colour Monitor  
4 Bit Video Card  
Standard Keyboard  
£5995.00

### 80 Meg Hard Disk Mono System

Macintosh II 2MB RAM  
Internal Floppy Drive  
Internal 80 Meg Drive  
Hi Res Mono Monitor  
4 Bit Video Card  
Extended Keyboard  
£6795.00

### 80 Meg Hard Disk Colour System

Macintosh II 2MB RAM  
Internal Floppy Drive  
Internal 80 Meg Drive  
Hi Res Colour Monitor  
4 Bit Video Card  
Extended Keyboard  
£7295.00

# VISUALIZER

## Here is a useful IIGS business program that complements and works alongside AppleWorks

Imagine you have created a database of your project, analysed the results in the spreadsheet and written your report on the wordprocessor. What better way to finish the job than to display those findings in graphical form to get the message across!

### Data sources

Visualizer is not an AppleWorks add-on, but a stand alone program that can take AppleWorks data and convert it into a graph, or you can enter the data directly into Visualizer from the keyboard.

You put the data into a matrix of spreadsheet-like cells although these have no relational calculation ability for standard graphs and are simply used for storage.

	A	B	C	D	E
1		1983	1984	1985	1986
2	Sales	11	20	20	18
3	Expns	5	10	9	9
4	Profit	6	10	11	9

Fig 1

### Setting up

You would normally have two types of information - **titles** and the actual **numeric data** (see fig 1).

In the example we have Sales, Expenses and Profit values for the years 1980 to 1983.

Using the mouse, you select the cells containing the data values, then you choose a graph type from a pull-down menu.

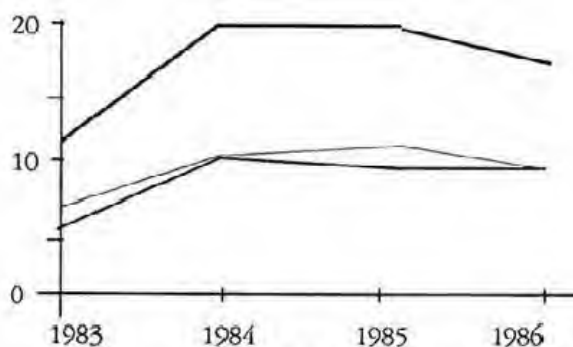


Fig 2.

If you pick **Point/Line** you get the graph (shown in Fig 2) with the points plotted and joined by

coloured lines, with the axes and tick marks in 'x' and 'y' directions, and titles on the axes picked up from the cell matrix. And it is as easy and quick as that!

If you think the figures would show up better in a bar graph, you can simply select **Bar** from the menu and it redraws in bar chart style (see Fig 3). Each category is in a different colour and there is a little legend box to explain which is which.

### Graph types

There are 8 graph types available: Pie, 3-D Pie, Bar, Point/Line, Area, High-Low, Scatter, and Regression. If

you want to make a particular graph look different there are a number of other options you can employ. For instance you can change the colours from a choice of 136 on the palette, or you can use different axes lines, or add text for headings and labels.

You can even overlay your graph on top of a picture loaded in from a paint program.

The finished graph can be printed on an ImageWriter II connected to the serial port, and can be in colour or black/white. It will also work with the LaserWriter.

### Conclusion

Overall it is an easy-to-use program which makes the task of creating business graphics a pleasure.

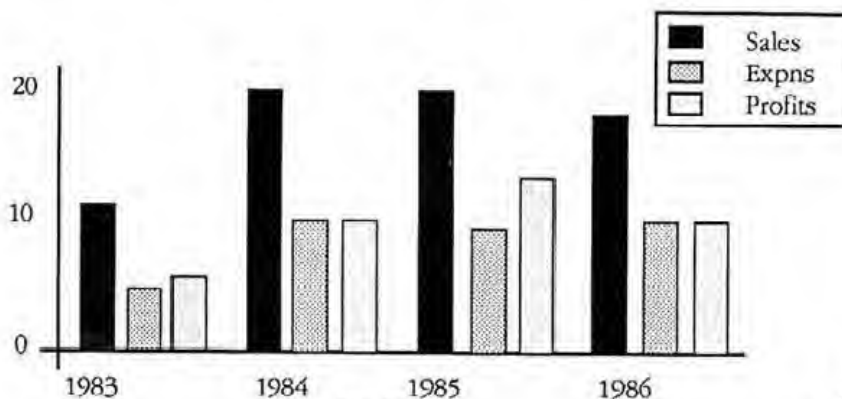


Fig 3.



## APPLEWORKS AND IIGS APPLEWORKS 2 EXPANDER

The Appleworks 2 Expander is an enhancement program for Appleworks 2 which enhances and expands Appleworks 2 when used with certain memory cards.

Here's a list of the AppleWorks enhancements created by the AppleWorks 2 expander when used with GS-RAM Plus cards on the IIGS:

- \* Word Processor and database Clipboard expanded to 2,042 lines (versus 250)
- \* Up to 22,600 lines in the Word Processor (versus 7,250 lines)
- \* Up to 22,600 records in the Data Base (versus 6,350 records)
- \* Variable size printer buffer
- \* On-screen time display
- \* Automatic time/date entry into the database
- \* Print-file cache (i.e. ALL of AppleWorks is loaded into memory - so doesn't access the disk to print)
- \* Expander options menu
- \* Multiple disk file-saving capability
- \* AppleWorks Desktop expansion to 8 Meg

Other features: GS-RAM and GS-RAM Plus are totally compatible with and surpass the Apple GS Memory card standard.

The AppleWorks 2 expander is supplied FREE with GS-RAM and GS-RAM Plus.

Prices (excluding VAT)

GS-RAM 256K	£169.00
GS-RAM 512K	£209.00
GS-RAM 1 Meg	£269.00
GS-RAM 1.5 Meg	£319.00

GS-RAM Plus 1 Meg	£399.00
GS-RAM Plus 2 Meg	£629.00
GS-RAM Plus 3 Meg	£849.00
GS-RAM Plus 4 Meg	£1059.00
GS-RAM Plus 5 Meg	£1259.00
GS-RAM Plus 6 Meg	£1419.00
GS-RAM Plus 7-8 Meg	£CALL

256K Upgrade Kit	£40.00
1 Meg Upgrade Kit	£240.00

The AppleWorks 2 Expander also works with, and is supplied FREE with these other memory cards:

### for IIC

Z-RAM Ultra 2 - 256K	£269.00
Z-RAM Ultra 2 - 512K	£309.00
Z-RAM Ultra 2 - 1 Meg	£389.00
Z-RAM Ultra 3 - 256K	£329.00
Z-RAM Ultra 3 - 512K	£369.00
Z-RAM Ultra 3 - 1 Meg	£449.00
65C816 16 Bit Option	£79.00

Enhancements as for GS-RAM and GS-RAM Plus but maximum desktop is 727K (1 Meg Z-RAM Ultra) and printer buffer is fixed at 64K. The in-built clock also provides file date/time stamping as well as other time options. AppleWorks is fully pre-loaded into RAM. Also provides most of the enhancements for ALL earlier versions of AppleWorks.

Other facilities: 16-Bit Option, clock

Z-RAM Ultra 3 includes Z-80 co-processor and CPM.

### for IIGS

256K Ramworks III	£199.00
512K Ramworks III	£239.00
1 Meg Ramworks III	£319.00
1.5 Meg Ramworks III	£469.00
3 Meg Ramworks III	£1,299.00

All products are also available from your local dealer.

All products carry a ten-day no-quibble "money back if not delighted" promise plus a one year guarantee.

Ordering information: Add £1.00 P&P per order + VAT @ 15%

## BIDMUTHIN Technologies implementing your ideas

Enhancements as for Z-RAM Ultra, but separate clock (e.g. TimeMaster or SerialPro) required for time/date features and printer buffer only works with Super Serial Card (or SerialPro).

Other features: 80 column display built in. (Replaces 80 col card). RGB option, for IIGS

256K RamFactor	£239.00
512K RamFactor	£269.00
1 Meg RamFactor	£319.00

RamCharger Battery Back-Up	£179.00
----------------------------	---------

Enhancements as for GS-RAM but no printer buffer and separate clock (e.g. TimeMaster or SerialPro) required for time/date features. Max desktop 1 Meg.

Other features: Allows AppleWorks V1.3 to run on IIGS. Also enhances AppleWorks V1.3 on IIGS. Battery back-up option for permanent data storage, can boot from RamFactor, on-board partitioning firmware. Functions as full RamDisk on GS, e & +.

### OTHER HARDWARE

Heavy Duty Power Supply (e/+)	£75.00
IIC System Clock (c)	£49.00
Phasor Music/Speech Synthesizer (e/+GS)	£179.00
Pinpoint Apple IIGS Enhancement Kit (e)	£29.00
Pro-Apple 20 Mb Hard Disk (IIC/GS/e, Mac, Mac+)	£995.00
SerialPro - Serial Card + Clock (e/+GS)	£139.00
TimeMaster II H.O. Clock (e/+)	£99.00
TransWarp Accelerator (IIGS/+)	£279.00
Viewmaster 80 (80 cols on IIGS)	£139.00
Z-80 + Card inc. CPM (GS/e/+)	£139.00

### IIGS SOFTWARE

AutoWorks 2.09 - Macros etc. (GS/e/c)	£49.00
DazzleDraw - dble hi-res graphics (e/c)	£69.00
Document Checker - fast spell checker (GS/e/c)	£69.00
FontWorks - for AppleWorks (GS/e/c)	£49.00
InfoMerge - for AppleWorks (e/c)	£29.00
Keyplayer Macros (reqs Pinpoint) (GS/e/c)	£49.00
MultiScribe - GS Wordprocessor (GS)	£99.00
MultiScribe 2.9 Wordprocessor (e/c)	£69.00
PinPoint 2.0 - Desktop accessories (GS/e/c)	£89.00
PinPoint Toolkit (inc RunRun) (GS/e/c)	£69.00
Point to Point - Communications (GS/e/c)	£99.00
ProBasic w. Program Writer (GS/e/c)	£49.00
ProFiler - Database (GS/e/c)	£99.00
Quark Catalyst 3.0 - Mac-like Desktop mgr (e/c)	£49.00
RamDrive (Dos3.3/ProDos/Pascal/CP/M) each (e/c)	£29.00
Ram Enhancement/Management Kit (e/c)	£29.00
RunRun - Desktop Manager (e/c)	£49.00
Spelling Checker (reqs Pinpoint) (GS/e/c)	£69.00
TopDraw - Graphics for GS (links w. MultiScribe)	£99.00
VIP Professional - (e/c) (Lotus 123 on e/c)	£199.00
VIP Professional - GS (Lotus/Excel on GS)	£249.00
Visicalc Expander Disk (e/c)	£29.00
Visualiser - e/c - Graphs AppleWorks (e/c)	£79.00
Visualiser - GS - Graphs AppleWorks (GS)	£89.00

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# LOOKING-UP & THINGS LOOKUP'

## Part two of Tom Wright's explanation of the finer points of spreadsheets.

LOOKUP's restrictions (drawbacks) are that reference values in the data (LOOKUP) table must be in ascending order, in the same row or column, and must not include labels.

To illustrate these restrictions for the benefit of anyone who may be puzzled, or timid we can enter the following example onto the same spreadsheet that we created last time, hope you saved it to disk (don't forget to turn off automatic recalculation first, then turn it back on when finished typing).

the cell containing the LOOKUP formula.

The purpose of this little example is to show that the relative positions of the calculating cells, manual entry cell, and the LOOKUP table have no effect on the function's ability to find the correct value.

If you now change the value in the manual entry cell to 0.002, or any other number smaller than 1, you will find that NA appears in each of the four calculating cells.

The LOOKUP table does not have a reference value lower than 1 so the answer is NOT AVAILABLE.

Entering any number larger than 4, try 90000 might as well think big, will result in the calculating cells displaying the value 40, the function is simply finding the largest value

that it can find.

The rule for manual entry cells is therefore that you must ensure that the value that you enter is within the range covered by the LOOKUP table. If you break this rule the function will warn you if you err on the low side, but if your mistake is on the high side it will happily tell lies.

To demonstrate the fact that your LOOKUP table reference values must be in ascending order, change them as follows:

CELL	CONTENT
H51	4
H52	3
H53	2
H54	1

Now enter the value 1 in cell D51 and the calculating cells will display NA. The function is effectively looking for a table reference prior to H51 which is of course not available.

Entering the value 1 in cells H51 to H54 will result in the calculating cells displaying the value 40, the highest cell with the reference value is being used from the table. LOOKUP should now be reasonably clear so we'll move on to something else.

The IF-THEN-ELSE sequence is well known to programmers and is happily available to us on all decent spreadsheets (if you have a brand X spreadsheet without it throw it away and buy another). Before going on use your spreadsheet cell blanking function to erase the example from cells C50 to I54.

If we reconsider the example concerning our Wozlet manufacturing company we can introduce use of IF-THEN-ELSE in connection with the calculated number of lorry loads. Let's assume that the number of pallets per lorry load in the example is based on using our own company transport vehicles, but that we only have 7 vehicles and will need to hire additional transport if the requirement exceeds 7.

First we have to make some more room so position the cursor on column P and insert 6 columns, then enter the following:

CELL	CONTENT
P27	Addit.
P28	Capac.
P29	Req'd
P30	—
	IF (N31>7, (N31-7), 0)
	IF (N32>7, (N32-7), 0)
	IF (N34>7, (N34-7), 0)
	IF (N35>7, (N35-7), 0)
	IF (N37>7, (N37-7), 0)
	IF (N38>7, (N38-7), 0)
	IF (N40>7, (N40-7), 0)
	IF (N41>7, (N41-7), 0)
	IF (N43>7, (N43-7), 0)
P44	—
	SUM(P31...P43)
P46	—
P48	(P45*I6)

When the sheet is recalculated you should find that each dayshift except Friday, requires the hire of 1 additional lorry, Friday requires none, each nightshift requires 2.75.

CELL	CONTENT	DESCRIPTION
LOOKUP (D51, H51...H54)		
LOOKUP (D51, H51...H54)		
LOOKUP (D51, H51...H54)		
LOOKUP (D51, H51...H54)		
D51	1	Manual entry cell
H51	1	reference value
H52	2	" " " "
H53	3	" " " "
H54	4	" " " "
I51	10	table data
I52	20	" "
I53	30	" "
I54	40	" "

You should now find that cells C50, C58, F50 & F58 all display the value 10, by changing the value in cell D51 we can cause the value displayed in C50, C58, F50 & F58 to display any of the values in the range 10 to 40. This happens because the formula contained in each of the four cells looks at the value in D51 then finds its equivalent in the column of reference values between H51 & H54, the value to the right of the equivalent reference value is then displayed in



With the original manual entries we have a requirement for 150 hired lorry journeys during the contract.

IF function is checking to see if the number of lorry loads is greater than 7, if it is the sum of lorry loads minus 7 is printed, if the number of lorry loads is equal to or less than 7 then zero is printed. Save the modified spreadsheet to disk then play around with the manual entries. Try changing the Required volume in I3, or Assembly type in I5, TARGET TIME in I6, or Working Pattern in I8. IF is obviously a very

useful function which can save a lot of time and effort for spreadsheet users, if you haven't used it before you will find that it is well worth a little experimenting to save yourself a lot of time and effort later.

If you are an Appleworks user unless version 2.0 has more functions than version 1.3, you may have problems with some of the other functions that I hope to discuss when I have time. Appleworks is a great package but like many other integrated packages its individual parts are weak, the spreadsheet is

extremely useful in terms of the matrix size that can be achieved but not much use in terms of useful functions.

That comment isn't intended in a negative way, hopefully at some time in the future we will see an improved version of Appleworks. You can achieve similar function effects in some cases by using the available Appleworks functions, but it is hard work in comparison to the better equipped spreadsheets.

## CORRECTIONS FOR "THINGS ARE LOOKING UP"

The article "THINGS ARE LOOKING UP" which appeared in the June issue of Apple2000 had unfortunately been extensively 'modified' by the gremlins, presumably the printer's premises are thoroughly infested with them.

In view of the fact that I have now used that spreadsheet example twice, and may do so again, it is doubly important that the following corrections are made to the spreadsheet.

All of the corrections relate to page 21 of the June issue.

I believe that the corrections will make the spreadsheet work as intended, and I hope that nobody got too frustrated with the result of the gremlins work.

Steve Needham pointed out the fact that as published the sheet did not work, I am grateful to him for bringing it to my attention.

Tom Wright

### LOOKUP TABLES - section requires the following addition :

CELL CONTENT	DESCRIPTION
Q11 6	Number of pallets per lorry load.

CALCULATED DATA - section requires the following additions:

CELL CONTENT	DESCRIPTION
I48 (I45*I6)	Order Total volume
L48 (L45*I6)	Order Total Pallets
N48 (N45*I6)	Order Total Lorry loads

	were missing
LOOKUP (I5,P3...P6) "	" " "
LOOKUP (I5,P28...P31)	" " "
LOOKUP (I8,P8...P9) *2	" " "

LOOKUP (I21,S21...S22) \*I24 were missing for cells  
I31 to I43 inclusive

LOOKUP (I21,P21...P22) *I24	
LOOKUP (I21,S21...S22) *I24	
LOOKUP (I21,P21...P22) *I24	
LOOKUP (I21,S21...S22) *I24	
LOOKUP (I21,P21...P22) *I24	
LOOKUP (I21,S21...S22) *I24	
LOOKUP (I21,P24...P25) *I24	
SUM (I31...I43)	Cell identity was missing
SUM (L31...L43)	Cell identity was missing
SUM (N31...N43)	Cell identity was missing

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- 1 - 16k Card • 2 - 80 Column Card
- 2 - Apple Drive Card
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- 1 - Clock Card • 1 - RGB Card
- 1 - Serial Card • 2 - T.V. Modulators

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# Mac2000

Norah Arnold takes a look at topics of interest to Macintosh owners.

### Explanation?

A few weeks ago during June I was using MacTerminal and demonstrating to a friend the convenience of downloading from ERIC, otherwise known as EDUC1, the academic database of papers concerning education on Knowledge Index. While on-line our telephone line was struck by lightning - not a very pleasant experience.

The Macintosh spluttered and went down with a system error. I restarted and immediately redialled, logged in again to Knowledge Index and then logged off properly, with thoughts floating around in the back of my mind about being inadvertently logged on to the USA database in California for the whole night if I didn't watch out.

Having done that successfully, I was a bit put out to find that from the moment I logged off, all the telephones in the house were dead. One of the telephones was completely useless and has had to be replaced. This leaves me with a couple of questions. Firstly, why was my modem completely unaffected by all this? How come the phone was still OK when I redialled but subsequently appeared to have been sizzled?

If anyone out there has the answer, please let me know.

## Thanks, Apple.

As the organiser of the Herts and Beds Group meetings, I would like to say a special thankyou to Mary Ainsworth and Andy Seymour for coming along to Park Street to demonstrate the Macintosh II. The evening was well attended and was certainly very much enjoyed by all those present.



## An Open Evening with Leslie Fox Albin

Following the success of being awarded the 1987 MicroCAD Achievement Award for Architecture, Leslie Fox Albin Partnership held an open evening to demonstrate their skills in the use of CAD on the Macintosh. Those attending were able to look at the programs they use in their business and also the finished results.

The most impressive feature of their set up is the quality of output achieved from the system which relies on an ImageWriter 15 inch printer for hard copy. This is pasted up into full size drawings which are then taken to a print shop for positives to be produced.

Prospective customers could not fail to be influenced by both the quality of the drawings and the speed of their production.

Following on from their successful experiences they now plan to offer training in the use of CAD on the Macintosh for Architects. If you are interested in more details they can be contacted at 01-831 8726.

## More on MSC/PAL

The following two items from the MacNeal-Schwendler News publication give information about important programs developed to be additions to the MSC/pal Finite Element package reviewed elsewhere in this issue. Together they should make the process of developing and specifying a model much more rapid.

**MSC NEWS (MNS-14)**

### Interface Links 3D-Modelling, Stress Analysis Packages on the Macintosh

An interface that integrates computer-aided design with stress and vibration analysis on the Apple Macintosh computer has been announced by Visual Information, Inc. and the MacNeal-Schwendler Corporation.

The interface links Visual Information's Design Dimensions 3-D modelling design program with MacNeal-Schwendler's MSC/pal analysis program. The interface represents one of the first utilities that prepares computer-aided design and drafting files for use with engineering analysis on the Macintosh.

"The interface will benefit both designers and engineers," said Nick Pavlovic, president of Visual Information. "Designers using Dimensions can now efficiently transfer their design to MSC/pal to perform stress or vibration analysis. Likewise, an engineer using MSC/pal can use Dimensions to create his model graphically."

The interface, which resides within Dimensions, first requests the user to specify the fineness of the mesh spacing. It then facets (or "tiles") the drawing with quadrilaterals, or triangles, and creates text file input, complete with node points and elements for MSC/pal.

"The interface is an important link between two of the most widely respected 3D design and analysis programs," said Ken Blakely, marketing manager of PC products for MacNeal-Schwendler. "It can save substantial time and effort by eliminating the need to create a separate geometric model description for analysis. This is especially advantageous during the early design stages, where many iterations are required."

Dimensions is a 3-D colour CAD and solid-shaded modelling system for the Apple Macintosh. The package provides realistic images for technical and product design with resolutions of up to 4000 x 4000 and up to



16 million colours displayed simultaneously.

For further information, contact Nick Pavlovic at Visual Information Inc., 16309 Doubleglove, La Puente, Calif., 91744, (818) 918-8834.

#### MSC NEWS (MNS-17)

#### Macintosh Drafting, Drawing Packages Linked to Stress Analysis Program

CADMOVER converts IGES, MiniCad, MacDraw files for use with MacNeal-Schwendler's MSC/pal analysis program.

An interface that links major Apple Macintosh drafting packages with MSC/pal, the MacNeal-Schwendler Corporation's 3-D stress and vibration program, has been announced by Kandu Software and MacNeal-Schwendler. The interface represents one of the first utilities that prepares computer-aided design files for use with engineering analysis software on the Macintosh. The link saves engineers and designers time and effort by not having to recreate a model in order to analyze it.

Kandu Software's CADMOVER package now translates IGES, MiniCad (from Diehl Graphsoft), and MacDraw (from Apple Computer) files into model definition files for MSC/pal. The translation package works by converting straight lines, rectangles, and polygons with three or four sides into MSC/pal beam and plate elements.

To begin the process, a user first "meshes" a drawing into straight lines, rectangles, or polygons, and saves the results in a file. CADMOVER then reads and translates this file into the elements required by MSC/pal.

For further information, contact Ken Lathan, Kandu Software, P.O. Box 10102, Arlington, VA 22210-1102, (703) 532-0213, or Ken Blakely, MacNeal-Schwendler Corp., 815 Colorado Blvd., Los Angeles, Calif. 90041, (213) 259-3875.

#### Technical Info from AppleText

##### Macintosh SE keyboard faults.

If you are experiencing any of the two following faults, here are some quick fixes:

**Problem 1:** Keys on the left side of the keyboard stick. **Fix:** Remove keyboard cover, and re-align the mechanical assembly so that tabs fit into their correct slots on the bottom of the keyboard.

**Problem 2:** Keyboard is dead. **Fix:** On the etch side of the board, there may be a wire extending from the blue crystal below location C1 (at the top of the keyboard) which has pierced the protective plastics. Clip and remove this wire. A high percentage of the keyboards coming back to Apple have one of these two problems.

##### Macintosh SE Fan Noise

As you may be aware we have been actively chasing an interim fix for the Macintosh SE fan noise problems. Two proposed interim fixes were tested in Cupertino:

- i) A resistor was added to reduce the fan speed and air flow and therefore noise from the system.
- ii) A new fan and bracket were tested in a system with the existing CRT video board.

##### RESULTS

- i) FAILED...Some of the fans failed to start with reduced power thus causing thermal degradation.
- ii) FAILED...These units failed terribly on Drop Test. It would be impossible to transport these units and guarantee quality. Please ensure no interim fixes are implemented in light of this information. To resolve the problem, the video board will have a new layout and will be rotated away from the fan. There will be a new axial style fan mounted on a bracket secured to the analog board. This will be in production from September 1st at Cork.

##### Mac SE and Mac II: Internal SCSI

When a Macintosh has an internal SCSI hard disk, it is already internally terminated. Therefore, you do not need to add a terminator until you add more SCSI devices to your system. Then you only need to add one terminator to the end of the SCSI bus.

##### The Macintosh II and SE: Differences that aren't apparent

There are a number of obvious differences between the Macintosh SE and the Macintosh II. The situations below describe differences that are not apparent.

##### Number of Supported Floppy Drives

The Macintosh SE has an external drive port, but the Macintosh II does not. If two floppies are installed internally, the Macintosh SE can support as many as three floppy drives. The Macintosh II can support no more than two floppy drives, and cannot support an Apple HD20 or external floppy drive. SCSI Drive Interleave Scheme

The ROMs of the Macintosh SE and Macintosh II have different SCSI disk interleaving schemes. Although

disks can be used interchangeably, they will work most efficiently on the system on which they were initialized. The Macintosh SE uses a 2-to-1 interleaving scheme, while the Macintosh II uses 1-to-1 interleaving. Therefore, a SCSI disk initialized on a Macintosh SE and moved to a Macintosh II will not transfer data as quickly as a Macintosh II SCSI drive, since the Macintosh II will be forced to wait for every other block of data, rather than using them in sequence. If a Macintosh II SCSI drive is taken to a Macintosh SE, the speed difference will be even more apparent. The Macintosh II drive will have blocks allocated in sequence on each track. But the Macintosh SE will not be able to accept the data that quickly, so the drive must make almost a full rotation before the second block again passes under the head, and the information can be read from the drive.

##### Macintosh SE: Powerup Procedure - Blowing Fuses

If you switch off an SE then you MUST wait 30 seconds before powering up again, if you quickly switch power off and on again without this pause there is a likelihood that the internal mains fuse will "blow". The problem is being investigated by Cork and a permanent solution will be notified to all dealers as soon as practicable.

##### Macintosh SE and Macintosh II:

**Resetting parameter RAM** On the Macintosh SE and Macintosh II, resetting parameter RAM is only implemented in Control Panel 3.1 which comes with the disk with System 4.1 and Finder 5.5, the disk Macintosh System Tools 2.0. While bringing up the control panel, hold down these keys in this sequence: Shift, Command, Option. There will be a dialog box asking if you want to zero parameter RAM; select Yes, and restart your machine. Parameter RAM will be set at zero; the clock is not reset. Restart is necessary to this operation. After restarting the computer, you can set the options you want after opening the control panel again.

**Macintosh SE:** Slower performance of second disk drive, the upper disk drive (the "external" drive) operates differently from the lower "internal" drive or from any other 800K drive. The problem resides in the firmware. The software is testing for the source drive at each read whenever the source drive is the upper drive. There have been no fixes for the problem. (Downloaded from AppleText by permission of Apple Computer UK Ltd.)

# Learn Word 3.0

## Irene Flaxman looks at one of the new training courses now available for the Macintosh

The Editor included in the April issue of the magazine, my review of the Excelerate training packages by Personal Training Systems. At the time, I was impressed by them, but I made the point that I was already familiar with the Excel program so it may not have been a fair test. However, I have not had much experience of Microsoft Word, and I have no previous experience of Word 3.0, so my trial of LearnWord 3.0 (by the same Corporation) was a fair test.

There are three courses in the full series:

- Beginning Course
- Intermediate Course
- Advanced Course

Each pack comes complete with an audio cassette, a Command Summary Card, and a disk. The courses each contain 10 lessons, taking you through the various functions of the program. The intention is that you take the course at your own pace, reviewing any material that you didn't understand the first time through, and it's a very good system. I found that I took the 'standard' time of 90 minutes for each, and by the end of the third course I was confident enough to use the program to write this review.

I must admit that the courses have converted me to Word 3.0. I have always found MacWrite adequate for my needs, and I have felt that the effort required to learn to use Microsoft Word properly was not justified as I would not need the special features it offers. I seemed to have an aversion to the program, assuming that it was difficult to learn.

These courses, however, have made it all seem so easy. Yes, I will still have to look up some of the features I might want to use, but the basic knowledge is there and I have lost the negative impression I had of the program. When you try using Word 3.0, it is a powerful program, and well

worth the effort of learning to use it.

The courses guide you through the functions, introducing a new idea in each lesson providing practice files for you to try out the techniques, explaining how best to use the various features, and reviewing the information before going on to the next lesson which then introduces a more advanced topic.

Everything is presented in small packages of information. That way, it is more manageable so that your brain retains more details. The order of presentation is also conducive to the learning process, as each topic follows on logically from the previous topic. Also, the presenters do not have strong American accents!

The examples have been well-prepared, to illustrate all the functions of the program. If you have ever had the task of preparing a training schedule, you will appreciate the effort that has gone into this. So often, an American product which is imported into the UK is so typically American that its content and presentation are distracting to the British - which defeats the object of the exercise. I did not find this with the PTS courses. The examples and presenters were very plausible.

I don't intend to present you with a list of contents of the courses, but the following will give you a feel for them:

**Beginning:** Margins, Justification, Tabs, Tables, Borders/Boxes, Spelling Checker, Headers and Footers.

**Intermediate:** Glossary, Form Letter, Hyphenation, Columns, Search/Replace, Printing on Two Sides.

**Advanced:** Indexes, Footnotes, Outlines, Table of Contents, Linking, Hidden Text, Pasting Graphics, Scientific.

The courses do demonstrate some 'short cuts' as you go through the examples. This idea is not introduced

immediately, but it does start to appear during the Beginning Course. I approve of this, as I think that you should use keyboard alternatives when word processing - if you are typing at the keyboard, you don't want to break the flow of your work by using the mouse. The keyboard alternatives are not the only short cuts introduced, as the use of glossaries, user-defined styles, dictionaries - all are given coverage.

Topics are brought into the courses more than once, if appropriate. As an example, the use of glossaries is the first topic of the Intermediate Course - but the use of glossaries is recommended elsewhere on this and the Advanced Course, with a gentle reminder of how to use them (in case you've forgotten).

Having been taken through the functions in the ten guided lessons, an exercise is set at the end of each course. You will have to keep switching off your tape player during this, as you perform the various tasks set (without the step-by-step guide, this time). This is intended to cement your learning, by giving you practice in using the program unassisted. However, if you really can't remember, you will be advised which lesson you should review to find the solution to the problem.

As I said of the Excelerate courses, I like this method of teaching. I did have to listen to one or two sections a second time before continuing. But I didn't need to review any lessons when working the examples. I have started to use Word 3.0 in earnest, so that must be a recommendation!



LearnWord 3.0 is distributed in the UK by Mayfield (UK) Ltd, 96R Walton Road, East Molesey, Surrey, KT8 0DL. The cost is £39.95 (plus VAT) per course. As there are three separate courses in the series, so it would cost a total of £119.85.



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# Mac Library

by Norah Arnold

## Seven New Disks

This month there are seven new disks to add to the Macintosh Library. All this month's disks are 800K. This exemplifies the current trend towards 800K demo disks, etc., coming into the library. During the next month the Macintosh Library will be reorganised and will be mainly 800K in future. There will always be some demonstration versions of commercial programs which are put out on disks of a different size, such as 400K.

Those members only having 400K drives will be able to specify that the disks which they order should be split onto two 400K disks and the price will be adjusted to reflect the extra disk media supplied.

Naturally, it is hoped that this system will keep everyone happy, and we will try to sort out any problems that arise as speedily as possible.

## Disk 160

### LabVIEW™ Demo Disk

This demonstration is in the form of an animated slideshow. The name LabVIEW is formed from Laboratory Virtual Instrument Engineering Workbench. This is what National Instruments Corporation say about LabVIEW:-

Traditional instrumentation systems consist of individual instruments that are physically interconnected. Each instrument has a front panel with its own combination of indicators, knobs and switches. The user can intuitively operate these instruments directly from the front panels. LabVIEW continues this tradition, making available powerful tools for constructing engineering and scientific applications. LabVIEW provides the full set of options required for scientific programming, designed for applications involving instrument control, data acquisition, data analysis, data display, database management and report generation.

It is also an excellent tool for stand-alone applications such as scientific computation, modelling, simulation and experimentation.

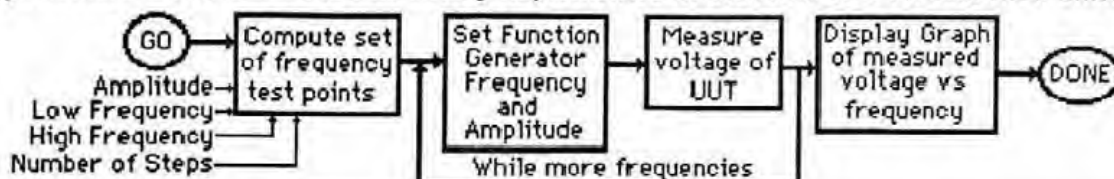
The uniqueness of LabVIEW is the packaging and representation of a software module as a Virtual Instrument (VI). A VI is a real instrument, except it is software. A front panel specifies the inputs and outputs and provides the interface for interactive operation. Behind the front panel is a block diagram which is the actual executable program. The user can operate any VI directly from the front panel or design an icon (or picture) with pins corresponding to the front panel controls and use the icon as a building block in the block diagram of other VIs. The result is a construction environment in which users can rapidly combine, interchange and share modules to build custom applications. LabVIEW applications are self documenting since the front panels, block diagrams and icons provide a

## Constructing LabVIEW Applications

Developing applications in LabVIEW is accomplished by combining Virtual Instruments to construct more sophisticated Virtual Instruments. Some Virtual Instruments may ultimately control physical instruments while others may be purely software, performing computations or even simulating a physical device. Hardware and software components can be easily combined and interchanged since they are both represented as Virtual Instruments.



Here is an example of a typical test and measurement application. The goal is to apply a voltage to a unit under test over a range of frequencies and measure the response. National Instruments' GPIB-Mac is used to interface between the Macintosh and the IEEE-488. A typical block diagram design is shown below. This can be easily implemented in LabVIEW as a Virtual Instrument.





complete pictorial description of the system.

To build a Virtual Instrument the user edits the front panel and block diagram windows. Just under the pull down menus is the tool palette of graphical cursors and execution controls. The windows can be sized, scrolled and viewed side by side. The front panel is created by selecting the desired controls from the menu. Each control appears on the front panel and a corresponding terminal (to wire to) appears in the block diagram. Control types can be binary, numeric, string or graph. Cluster allows grouping of controls into one logical control.

LabVIEW's interactive graphical environment reduces the learning curve. The built-in library provides high performance processing with easy to use icons. LabVIEW is a complete integrated environment, designed to allow users to develop applications from start to finish using one set of tools. LabVIEW is not a closed environment, however. It features a very flexible interface to other environments, providing full capabilities for IEEE-488 control, serial port communications, access to PC and PC/AT compatible cards with MacBUS, standard file I/O capabilities for communicating with other applications, and support for standard Macintosh tools for quality report generation. National Instruments is also capable of integrating software written in conventional languages into the LabVIEW environment.

LabVIEW requires a Macintosh Plus or a Macintosh with at least 1 megabyte of memory. An external 800K floppy or hard disk is required (a hard disk is recommended). LabVIEW can detect floating point support, such as a Hyperdrive 2000, and take full advantage of this hardware. LabVIEW also supports large screen displays such as the Radius Full Page Display.

Further information is given on the demo disk.

## Disks 161 to 163

**Update 1, Update 2 and Update 3**  
These three disks contain the latest updates of several small utilities, applications and desk accessories. Update 1 contains some items which have not appeared in the library before. Update 2 contains Scribbler 1.0 a new item from OWL Int. Update 3 contains the MacMan DA giving info from Inside Macintosh.

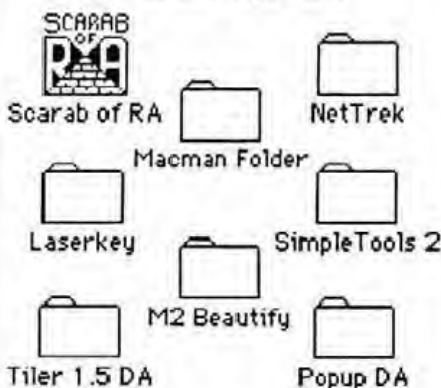
### Disk 161 Update 1



### Disk 162 Update 2



### Disk 163 Update 3



## Disk 164

### CE Software Disk.

This disk contains the best of the honourware programs from CE Software.

### Mock Package Plus 4.3.4

MockChart™ will make a graph (pie chart, line etc.) from numbers which you type in. It is limited to 100 rows by 3 columns. MockPrinter™ prints out text files

and will print in the background so that you can carry on with the job. MockTerminal™ is a comms program operating at 300 or 1200 baud. It has autodialing and other features.

MockWrite™ is a text processor DA and I wouldn't be without it. It is the DA I use most of all.

MockPackage Utilities supplements the other Mock DA's by combining some useful utilities into one program, including Configure MockTerminal and EZMenus.

**CalendarMaker 2.2** allows you to design and print a calendar using MacPaint pictures to add graphical decoration. It does allow you to specify the year.

**DiskTop** is a DA which allows you to Find, Rename or Erase files from within other programs. The Find option is very useful with hard disks and it gives the full path information.

**MacBillboard** is not only a graphics editor but it also allows you to enlarge your pictures up to 32 times their original size by printing full page pieces which can then be taped together. It also includes many other useful features.

## Disks 165 and 166

**Adobe Illustrator Gallery Disks**  
On these two disks are a variety of images produced with Adobe Illustrator. Although these images will be of most use to Illustrator owners, they may be printed without Illustrator by using SendPS which is included.



This American footballer is an example of the artwork on the disks. Other files contain sports pictures, animals and a variety of images, all of which show how the artists at Adobe have used Illustrator.

**All the disks above are 800K disks needing an 800K drive.**

# Let's Rip Open The Macintosh

## The third and final part of Cliff Wootton's series of articles on the internals of the system file.

In this concluding article we shall cover the remainder of the resources within the System File and some of the ways in which you can modify them for your own use.

### More System Resources

**INIT 3 Q** (202 bytes, system-heap, locked) This initialisation resource contains 68000 machine code that I suspect supports the MiniFinder. The only dumpable text message within it looked like a filename buffer with the word MiniFinder followed by a lot of spaces. This resource was introduced at release 2.0.

**INIT 13** (258 bytes, system-heap, locked) This resource was introduced for the first time at release 2.0. It appears to read a resource type **STR** but without disassembling it I cannot tell what it is.

**INIT 31** (256 bytes) This resource was introduced at release 3.0. The size increases to 284 bytes at release 3.2. It handles the search for external **INIT** resources outside the System File, during the system startup.

**INIT 35** (346 bytes) This resource was introduced at release 3.0. The size increases to 370 bytes at release 3.2. Without disassembling it, I cannot be sure what it is for.

**INTL 0** (32 bytes, purgeable) This international resource contains information about international numeric handling. It is used most likely by the routines contained in **PACK 6** although its id indicates that it is not owned by the international utilities package.

**INTL 1** (332 bytes, purgeable) This international resource contains information about international day/date handling. Like the **INTL 0** resource it

is probably most used by the **PACK 6** utilities. Neither of the initial resources conform to a common layout or structure. Nor is there any default structure for subsequent **INTL** resources that might be created. The size of this resource increases to 342 bytes at release 3.2.

**LDEF 0** (146 bytes) This resource was introduced at release 3.0. It is related to the operation of the List Manager found in **PACK 0**.

**MACS 0** (13 bytes) This is the version data resource for a System File. The resource type and id are stored as an entry within the **BNDL** resource and are implied from the creator code of the System File directory entry.

**MDEF 0** (684 bytes) This menu definition procedure is the default procedure that handles the Mac's menus. It expects **MBAR** and **MENU** resources to be created in accordance with certain rules as laid down in the Inside Macintosh book. This size of this resource is increased to 1022 bytes at revision 3.0 of the System File and is increased again to 1032 bytes at release 3.2. To inspect this resource further you will need to disassemble the machine code. The increase in size may be related to the facility of scrolling menu bars which has been mentioned in other technical references. This resource lives in the 128K ROM on a Mac Plus and is not therefore loaded from disk.

Note that according to Apple, the version 3.2 **MDEF 0** can be used with System version 2.0 to give scrolling menus.

**NBPC 1** (1070 bytes) This resource was introduced at release 3.0. To investigate it further, it will need to be disassembled as 68000 machine code.

**NBPC 2** (454 bytes) This resource was introduced at release 3.0. This resource will likewise need to be disassembled.

**PACK 0** (4542 bytes) This package resource contains the List Manager and was introduced at release 3.0. The size has been increased to 4544 bytes at release 3.2. From the documentation on this package, the implications are that it will work with System files of version 2.00 vintage.

**PACK 2** (2430 bytes, purgeable, locked) This package resource contains a set of 68000 machine code subroutines that support disk initialisation. They are all called through a single entry point with a function code to indicate which routine is required. The disk init package was revised after release 0.97 and has just undergone another revision for release 3.0. This time, the changes are major since the size of the resource has changed dramatically to 1894 bytes. The size has increased again to 1908 bytes for release 3.2.

**PACK 3** (3378 bytes, purgeable) This package resource contains a set of 68000 machine code subroutines that support the standard file handling interface. They are all called through a single entry point with a function code to indicate which routine is required. This package has changed fairly drastically at every release. It has now more than doubled in size to 7286 bytes for release 3.0 of the System File. The size increases again at release 3.2 to 7324 bytes. The latest changes are most likely related to the HFS additions.

**PACK 4** (4538 bytes, purgeable) This package resource contains a set of 68000 machine code subroutines that support the Standard Apple Numeric Environment (SANE). They are all called through a single entry point with a function code to indicate which routine is required. This package is documented in the Apple Numerics Manual as the **FP68K SANE** engine. There have been minor changes to this package at most revisions of the system with the size now being 4536 bytes (at revision 3.0).

.....Find out what resources are inside your System File.....

If you add a floating point coprocessor to your system, you should be able to modify this package to utilise it. Thereafter all your applications should be unaware whether they are using software of coprocessor facilities to compute floating point algorithms. This resource lives in the 128K ROM on a Mac Plus and is not therefore loaded from disk.



**PACK 5** (4234 bytes, purgeable) This package resource contains a set of 68000 machine code subroutines that support transcendental functions supplementary to the SANE package. They are all called through a single entry point with a function code to indicate which routine is required. This package is documented in the Apple Numerics Manual as the ELEMS68K SANE engine. This package has also undergone frequent revision. The size has changed to 4190 bytes at release 3.0 and it is noteworthy that this is the same size as was released in version 1.1 of the System File. This resource lives in the 128K ROM on a Mac Plus and is not therefore loaded from disk.

**PACK 6** (1436 bytes, purgeable, locked) This package resource contains a set of 68000 machine code subroutines that support the international facilities. They are all called through a single entry point with a function code to indicate which routine is required. The international package has just increased in size to 1480 bytes for release 3.0 and again to 1486 bytes for release 3.2.

**PACK 7** (208 bytes, purgeable) This package resource contains a set of 68000 machine code subroutines that support binary to decimal conversion (sometimes referred to as the scanner-formatter) section of SANE. They are all called through a single entry point with a function code to indicate which routine is required. This package is documented in the Apple Numerics Manual as the DECSTR68K SANE engine. This package has just increased in size to 238 bytes for release 3.0. At release 3.2 a massive size increase takes place resulting in a resource of 1350 bytes. There must be significant enhancements to the scanner-formatter routines. This resource lives in the 128K ROM on a Mac Plus and is not therefore loaded from disk.

**PAPA-8192** (48 bytes, purgeable) This resource is owned by the resource PDEF 0. Although there is no PDEF 0 in my System File, it is probably because I had no printer installed. I can find no documentation of what this resource is supposed to do but its id indicates that it must be printer related. It is not evident in any release other than 2.0.

**PAT# 0** (306 bytes, purgeable) This pattern list resource contains 38 default area fill patterns. It may be possible to add more patterns to this list but MacPaint will probably only present the first 38.

**PAT 16** (8 bytes, system-heap) This pattern resource appears to be the current desktop pattern defined by the control panel accessory. Perhaps the control panel selects a pattern from PAT# 0 and installs it here.

**PAT 17** (8 bytes) This pattern resource appears to be the mask that is used to flag a currently open disk on the desktop or a currently ejected disk.

**PREC 2** (72 bytes) The print record resource type stores information about the most recently executed print job. Since I had no printer connected or installed, this is not of much interest. It is in fact historical anyway. In one of the supplements to the Inside Macintosh, there are details of a special format applied to PREC 4 resources should they appear in any resource fork. Any PREC resources are related to the printer DRVr currently being used and are likely to change size and content frequently.

**PTCH 105** (154 bytes) This resource was introduced at release 3.0. It appears to patch the operating system code, hence the resource type PTCH. The size increases to 4716 at release 3.2. To further investigate this and the other PTCH resources, some 68000 machine code disassembly must take place.

**PTCH 117** (1874 bytes) This resource was introduced at release 3.0. It may be part of the HD20 driver. The size nearly doubles to 3810 bytes at release 3.2.

**PTCH 28927** (4674 bytes) This resource was introduced at release 3.0. It may be part of the HD20 driver. The size drastically reduces to 154 bytes at release 3.2.

**STR 0** (22 bytes, purgeable) This string resource contains the version and issue date of the System File. This is in addition to the MACS 0 version data which is stored in accordance with Finder requirements and referenced by a BNDL. System Files always contain a STR 0 containing the release date.

**STR 1** (11 bytes) This STR resource was evident in early system versions but was removed at release 1.1 (May 84). It was still evident in the System File supplied with Microsoft Basic (which was tagged as release 1.1 but differed in many respects from the formal release from Apple). The contents indicate some references to font handling.

**STR -8192** (32 bytes, purgeable) This string resource contains the name of the currently defined printer. The id indicates that the resource is owned by the printer

driver. The format of the resource is non standard in that it consists of a string with some additional data attached to the end. The data looks like machine code but until it is disassembled I cannot be certain. In most release other than 2.0, this string is correctly formatted and is only 12 characters long.

**STR -16096** (32 bytes) This resource was introduced at release 3.0 but was not evident in the 3.2 version.

**WDEF 0** (1200 bytes) This window definition procedure is a block of 68000 machine code that sets out how a window is supposed to appear. The size is increased to 1682 bytes at revision 3.0 of the System File. This is most likely related to the additional control box in the top right corner of a window's title bar. This resource lives in the 128K ROM on a Mac Plus and is not therefore loaded from disk.

**WDEF 1** (838 bytes, purgeable) This is an additional window definition procedure written in 68000 machine code. You can write your own code and substitute it if the Macintosh user interface does not support your requirements. By writing your own definition, a window can be any shape, circular etc or even a non symmetrical region. The size of this WDEF resource is increased to 924 bytes at revision 3.0 of the System File.

## System version 3.00

The sizes of most of the DITL resources have changed as well as two of the DLOG resources. These are probably associated with the new HFS file manager. The CDEF, WDEF, MDEF and PACK resources have all changed extensively. The window and menu operations are probably quite different now although the changes are likely to be additions rather than replacement coding. The INIT resources associated with the keyboard have grown about 30 percent larger. There are new instances of some of the older resource types (PACK 0, INIT 31, INIT 35) and also some new resource types altogether (LDEF, CACH and FOND). The changes appear to affect about a third of the resources and overall the size of the system file has grown considerably. I noted however that version 3.00 works quite alright on a 128K Mac but when the Finder 5.1 is used, there is not enough memory to work with more than one disk on the

desktop. Release 3.2 of the system file and Finder 5.3 appears to work at least some of the time on a 128K machine but Apple go to great lengths to warn users of the shortage of memory. Some of the facilities of the version 3.00 system could be fitted into a version 2.00 system. For instance the following will probably work:-

- New WDEF will give window zooming.
- New MDEF will support scrolling menus.
- New CDEF will support multiple line item texts.
- New PACK 0 will support the list manager. Note include LDEF too.

## Modifying System Resources

Having established what each of the individual resources within the System File do, we can now figure out how this information might be useful to us.

### 1. Redefine system fonts

You could easily modify the FRSV 1 resource to indicate that some special font that you need for your application, must be resident on the disk. Whilst it won't help your application until the font has been installed, once there the font cannot be removed by font mover programs. FRSV 1 has a two byte integer that indicates the number of following entries minus 1. The following entries are the font numbers that must remain. It is not necessary to flag the 0 point size versions of the fonts you want to keep.

### 2. Redefine the function key operation

To redefine which keys cause a MacPaint screen dump to be made into a file, or to change the key used as the print action key for a screen or window print, simply change the id of the FKEY 3 or FKEY 4 resources to the key you want the action to occur on. Alternatively write your own machine code routine and store it in an FKEY resource. Resources 3,4,5,6,7,8,9 and 0 should work. Resources FKEY 1 and FKEY 2 might override the default actions of command-shift-1 and command-shift-2 but I think it probably will not work as these are hard coded into ROM. On the other hand it might, since the resource forks of documents override applications, and applications override the system, perhaps the system overrides the ROM.

### 3. Define your own dialog control items

You can create your own machinery for hooking into the dialog and alert handlers. Simply write a machine code routine to handle the control item you desire and store it in a CDEF resource. Later you need to call it from a DITL which is hooked to an ALERT or DLOG.

### 4. Define your own window manager

If you want to create a hexagonal shaped window, according to the Inside Macintosh manual, all you need to do is to create a new WDEF resource containing the machine code necessary to handle it.

### 5. Define your own menu manager

If you need non standard menu handlers, then write the machine code and put it in an MDEF resource.

### 6. Additional icons

Create additional alert and dialog icons and store them in ICON resources. They can then be called by the DITL lists referred to by your ALERT or DLOG templates.

### 7. Additional space in the open file dialog

Very often, your filenames will overrun the filename box in the open file dialog. It is worthwhile editing the DITL and DLOG resources with the id -4000 to rectify this. Note that you cannot move the top left corner relative to its position on screen since this appears to be embedded in some code (probably within PACK 3).

### 8. Redefine keyboard key codes

Even without major reassemblies of machine code, minor patches on the INIT 0 resource will give you more key codes. There is no reason why any character between 0 and 255 cannot be generated by any key position (including shift and control keys). Patching will get new key codes onto typeable keys whilst machine code rewrites could make the keyboard behave like a piano keyboard if you really want it to.

### 9. Redefine numeric keypad key codes

It is feasible to modify the numeric keypad if you need it for instance as a bank of additional function keys having special significance within a particular application.

### 10. Redefine error message handler

The error message alert box that is put up when an error occurs is basically a default error message box

with an id code. The error message handler is cleverer than that in fact. You can define a handler for each specific error situation with as much or as little text as necessary.

Only if a handler is missing for the requesting error is the default one used. Add extra alert sub-resources to INIT 2 to beef up the error handler rather than get the ID=02 type messages. Alternatively rewrite the code blocks to do the register dumps that used to be supported as programmer alerts.

### 11. Redefine startup message

It is already a well documented point that you can create a MacPaint file called StartupScreen which the Macintosh will automatically load during booting. This does however use up a lot of disk space. You could, for simple startup messages, modify the DSAT 0 resource. Replace the icon sub-resource or change the text. Provided it remains functionally the same, there should not be any problem.

### 12. Modify the international stuff

You can probably modify the international resources INTL 0 and INTL 1 quite easily by means of R Edit and Res Edit. However there may be some newer additional parameters that you cannot get at easily even with them. You could always use Fedit to patch them. That is if you can find them with it.

### 13. Define new default patterns

With MacPaint, it has been suggested that to have a special default set of patterns, you can have a dummy document with those patterns saved within it. Why not replace resource item PAT# 0 with your own pattern list.

### 14. Redefine desktop masks

This really comes under the 'I did it because it was there' category. The two pattern resources PAT 16 and PAT 17 appear to contain the desktop background and icon open masks respectively. I think the icon open mask is inverted and then used to indicate disk ejected as well.

### 15. Redefine system cursors

There is no evidence within the System File of the arrow head cursor. It may be embedded within ROM and/or handled as CURS 0. The resources, CURS 1, CURS 2, CURS 3 and CURS 4 can be changed if you so desire. Some applications may override them anyway.

### 16. Change the desktop icons

There is a lot you can do with the desktop icons associated with the



System File. For instance it would be quite easy to have special icons for the Scrapbook, Notepad, Clipboard, Finder and Imagewriter by adding new ICN# resources and connecting them through the FREF resources to the BNDL. Next time the desktop is rebuilt the icons will appear.

### 17. Shortening the System File

Finally what of these system resources can we remove without affecting system run time performance. Well I do not have a printer connected, so anything printer related can come out. I could do without the function keys for the time being. Since the file was already installed in the desktop, none of the bundle data was necessary anymore. Nor did I need all of the fonts even though the system forced me to keep them. Two of the cursors I had not got any use for so they could come out. Since for the purposes of testing, I would not need the patterns, they could be removed. In the end, I removed the following:-

• BNDL 0	40	bytes
• CURS 2	68	
• CURS 3	68	
• DRV R 2	290	
• FKEY 3	312	
• FKEY 4	102	
• FONT 393	2152	
• FONT 512	0	
• FONT 521	2026	
• FREF 0	13	
• FREF 1	13	
• FREF 2	18	
• FREF 3	21	
• FRSV 1	10	
• ICN# 3	256	
• MACS 0	13	
• PAPA -8192	48	
• PAT# 0	306	
• PREC 2	72	
• STR 0	22	
• STR -8192	32	

Adding in the bytes saved due to pointers being freed up and the reductions in the size of the resource map, these deletions should trim the System File by something over 6K. As always, the usual recommendations apply regarding the tinkering with the internals of the system. That is always do it on a copy and thoroughly test it before committing any real data. Of course the Macintosh is designed to use all of the resources we have removed here so there will be some penalties. For instance, the System File is no longer capable of supporting MacPaint nor of generating screen files or printouts of any kind. If the files are copied to another disk then the desktop will not be set up properly

to display their icons. However for text editing on a disk that is nearly full it might be a way out of a hole sometime. Note that these removals have not been thoroughly tested and also that it may be possible to remove other resources as well. It is possible that these removals are configuration dependent and may not in any case work on other revisions of the System File. At release 3.xx there are more resources that potentially might be removed such as some of the formatting tools etc.

### Conclusion

Well that about wraps up this hacking session into the System File. If anyone has any useful points to add to this I would be keen to hear from them. Also if you have any System Files with different versions of the system I would like to have copies of them to look at. Later perhaps I may dig into the machine code routines.

If anyone would like to have a copy of the Res Ripper program then by the time you read this article, it should have found it's way into the PDS library. The package contains Data Ripper, the four pass Res Ripper, nearly 70 resource definition overlays, a collection of useful BASIC subroutines and the text of this document.

To use Res Ripper you will require Microsoft BASIC (from your local dealer) and Fedit (from the Apple 2000 software library). Later, I plan to make Res Ripper into a compiled application program that can be launched from the desktop. A new version will be announced in due course.

This article has taken nearly three months to hack into shape (taking into account the time taken to develop Res Ripper). Next time I plan to rip open the Finder and Desktop files. Now that Res Ripper is in a useable state, the hacking time will be vastly reduced.

### Eds Note:

Thanks to Cliff for an absorbing look into the Macintosh System, we await his next dive inside the Macintosh. If you have any comments why not write to Cliff via the P.O.Box.

## THE EUROPEAN CONNECTION

Anybody currently using Apple's Desktop Publishing system who is dissatisfied with the 300 d.p.i resolution of the Apple/Cannon Laserwriter can look forward to an 'Apple' of a different flavour.

Apple and Agfa have recently reached agreement for the marketing of Agfa scanners and printers through Apple dealers. It is said that the agreement sees the Agfa printer as top of the range with Apple's Laserwriter becoming the 'standard' model. Apple apparently see their agreement with Agfa as a means of improving Apple's credibility with potential corporate customers, via association with Agfa's long established reputation for excellence in imaging fields.

Readers may not be aware that Agfa have long had a reputation for excellence in conventional photographic and other 'photo' related fields. Agfa's reputation is currently enhanced by their PS400 LED page printer which achieves a resolution of 16 dots per millimetre (Apple's Laserwriter achieves 12), and this printer is the one that is involved in the deal with Apple. In addition to higher resolution the PS400 also provides a claimed 18 pages per minute printing speed compared to the Laserwriter's claimed 10. Claims relative to printing speeds are of course usually only worth the print that announces them, but logically the PS400 will produce a useful increase in capacity over the Laserwriter. Agfa's desktop scanner is also included in the agreement.

The introduction of a higher quality output choice for Apple DTP based work is compatible with movements by other companies in the micro trade, Apricot recently announced a similar deal whereby they will market the Apple Laserwriter as their 'top of the range' printer while also selling a printer of lower specification. Pressure from end users is also reflected in terms of the growing demand for improved quality in DTP based imaging. As a point of interest Agfa will be introducing a lower priced printer of their own in the not too distant future.

The Agfa products are not cheap, but then quality never is, if you are interested contact your dealer or Apple U.K.

# MacSeptember

## 18-20 September 1987

### at Nottingham University



East Midlands  
Mac User Group

**MacSeptember** is a new learning experience. It is aimed primarily at committed Macintosh users in the health, education, engineering and business fields. But whatever your level of experience you will be most welcome at MacSeptember. The tutorials will be led by experts and the accent will be on small group workshops and hands-on experience. You will be expected to bring your own Mac along. Residential accommodation (single rooms only) is offered at Cripps Hall, Nottingham University. The weekend is offered at an all-inclusive cost of £75 per private individual, (£120 for company-sponsored individuals).

The conference commences with dinner at 1900 hours on Friday, 18 September

#### Provisional workshops and tutorials

Saturday 19 September	Mac for Beginners	DeskTop Publishing	Programming	CAD	Music on the Mac
	Nick Helm <i>Good housekeeping</i>	John Barker <i>Good design and layout</i>	Paul Russell <i>Introduction to Pascal</i>	Adrian Harms <i>2-D drafting 3-D drafting Architron &amp; Schema</i>	Tony Johnson <i>Music sequences packages</i>
	Bruce Stidston <i>Word processing</i>	<i>Design clinic (bring your own)</i>	Paul Russell <i>Mac-specific Pascal</i>		Tom Orellana <i>Midi and the Mac</i>
	Paul Beaumont <i>Communications</i>	<i>DTP packages compared</i>	Paul Whitby <i>Workshop</i>	<i>CAD Project Model building</i>	Karl Bown <i>Jam factory Music creation</i>
	Clive Wilson <i>Spreadsheets on the Mac</i>	Bruce Stidston <i>Design Project</i>	Chris Roper <i>New Software</i>	<i>CAD Project</i>	Francis Hughes <i>Composition</i>
Sunday 20 September	Hardware Workshop	The Caring Mac	Business applications	Artificial intelligence	Laserwriter Special
	James Sanson <i>Plug in Power</i>	Karen Gowing <i>Mac for the deaf</i>	Neil Watson <i>Omnis 3</i>	Tony Hasemer <i>AI Theory</i>	Paul Whitby <i>Hardware</i>
	Philip Bath <i>SCSI hard disk Theory/practice</i>	Roy Stringer <i>Headstart Workstation</i>	<i>Omnis 3 Practical</i>	Tony Hasemer <i>Prolog Workshop</i>	Yorick Phoenix <i>Software Utilities</i>
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# MacPower

## Peter Trinder looks at MacMemory Upgrades as a way to stay on top of the POWER stakes.

I upgraded my 512 enhanced Macintosh to 2 Mb by adding a Max2 board by MacMemory Inc. I have now sold that and replaced it with their newest upgrade board called TurboMax.

### Max2

The Max2 is a daughter board that will fit onto either a 512 or 512e and will expand the memory to 2Mb. If it is installed onto a 64k ROM machine the memory is divided 512/1.5Mb; the 1.5Mb is in a RAM disk. (I think this is correct but as mine was on a 512 enhanced with the 128k ROMs I never tested it with the old ROMs). In my case the Max2 provided me with 2Mb of contiguous memory. A disk including a Ram Disk and ImageWriter spooler called MaxPrint is included.

The board is normally supplied already mounted on a genuine Apple motherboard on an exchange basis. MacEurope, who supply the upgrade on behalf of MacMemory, actually guarantee the whole upgrade including the Apple board for 12 months. I had mine supplied as a raw kit and had to modify the motherboard myself. I enlisted the aid of the company service engineer and we worked through the instructions step by step. I did the reading and he did the surgery. It took us 1 hour of concentrated chip removal, solder sucking, placing in new sockets and finally fitting the new daughter board into the new locations provided on the motherboard.

After fitting we set the voltage to the correct level, a very important procedure often forgotten. We were gratified with the About Finder showing 2048k! I would not recom-

mend attempting installing one of these upgrades from the raw parts, it is so much easier to get the board already fitted and warranted.

It is possible to add additional 2 Mb to the Max2, something that I never did because of the high cost of the Megabit chips. The chips required are the ones with 16 legs not surface mounted ones. It is also possible to modify a 128k board to add a Max2, instructions are provided and kits are available to special order.

I find that 2Mb was just nice. I use PageMaker, Word and Excel in Switcher all day with no problem, alternatively, I set 512k Ram Cache and the Mac will reload the last application in no time at all.

One feature missing from the Max2 is a SCSI port. MacMemory now have the MaxPort which adds this to a 512e Macintosh, either with the Max2 or without. I doubt whether any other make of SCSI port will work because of the physical limitations imposed by the Max2 board. The MaxPort clips onto the 68000 and a ribbon cable goes to an auxiliary board located on top of the disk drive case. From this board second cable goes to the external port. MacMemory designed this to fit into the battery compartment in place of the cover. The connection is a Centronics type not a DB25. I did not like the location, so I carved a neat hole in the same location as the SE external Bus port. We are fortunate at work to have a number of old Mac backs. So I had a backup in case of errors.

I have one recommendation if you have the Max2 and MaxPort and that is to have the MaxChill fan fitted. I felt that the Mac was getting rather hot. The MaxChill is very quiet and will not worry those who love the Mac for its peaceful silent



operation.

The combination of Max2 and MaxPort worked flawlessly and I can recommend these as an excellent buy.

### TurboMax

This upgrade consists of a daughter board which attaches to the motherboard of a 512e OR MacPlus, a new drive housing, an additional auxiliary power supply and a rotary fan. The board has a 68000 CPU running at 16 MHz, a faster SCSI port, an additional 1.5 Meg of RAM and an optional 68881 maths chip. It also has a built in interface for the E-Machines Big Screen. The RAM chips are on SIMMS and there is a pair of empty slots for two 1 meg boards to increase the RAM to 4 Mb. The new disk drive housing is ready drilled to take an internal hard disk.

Installation is relatively simple. It involves making only two solder connections, these are for the new power supply. Otherwise it is just a fitting job. Clear instructions are provided so that it is unlikely that any problems will occur.

The first operation is to strip the motherboard and disk drive mount. You then solder in the PSU connection. The PSU has a jumper for 110/220v selection so that it can be used in Europe. It is, of course, essential to set this before anything else. It comes set to 110v.

The next operation is to connect and setup the auxiliary power supply to the TurboMax board. Then, very carefully, because everything is laid out on the bench, turn on the power and set the correct voltage on the TurboMax



(4.9v). This is done without the TurboMax being connected to the Macintosh board.

Next operation is to attach the Killy clip to the Mac's 68000. This clip is a high class clip and can only be attached once. If you have a ceramic 68000 CPU (mauve coloured) make sure it has little plastic at each end. Some ceramics are actually on the board and are unsuitable for attaching the clip. (The black plastic 68000's are fine). So it is as well to check this with whoever is going to fit the kit. I did not find this as difficult as I had thought, following the procedure laid down in the manual, it snapped into place very easily.

With the clip on, you attach 3 standoffs to the TurboMax. Three little plates with instant adhesive are located on top of some chips on the Mac motherboard. You then lower the Turbo onto the Mac board carefully inserting the connecting clips into the Killy clip and resting the bases of the stand-offs on the plates you have just attached to the motherboard. This is not difficult but you must be careful.

At this stage you have to re-assemble, check that the Mac is working and set the voltage between pin 5 of the mouse port and the chassis to +4.9v. You then install the fan in the top right hand side of the case and connect everything up. I then cut a hole in the back of the case for the SCSI. This takes almost as long as installing the TurboMax! Interestingly they provide a 25pin connector so the standard Apple SCSI cable will work.

The exchange disk drive mount has space for a 20 or 40meg drive. MacMemory supply a Connor drive. There are several different versions of this drive, so I would suggest that MacMemory ones should be used. They are called TurboDrive 20 and 40. I will try to get hold of a suitable drive to try it out. The SCSI cable has got a connector built in so it is a simple matter to install.

If you have a 512E, you use the TurboMax SCSI port. On a MacPlus the you have the choice of using the Apple port or the TurboMax port by altering a jumper on the TurboMax. This does mean opening the case.

I had some initial problems with my SCSI which is a Qisk. They are 20 and 40 meg units. Very well made with neat metal cases, a SCSI device number selector on the front panel, and a security key like a car ignition on the front. They use a fast driver and initially my drive would not work off the TurboMax port. How-

ever I have temporarily re initialised with Apple's new SCSI 1.3 from the new system stuff and it goes very fast. The Qisk makers have subsequently tweaked their driver and we have tested a Qisk40 with a 1 to 1 interleave with Disk Test. For the Standard Qisk 100 32k Reads were done in 9.6 seconds. With a 1 to 1 interleave we got this down to 5.5 seconds!

The TurboMax gives you a total of 2Meg on a 512e board and 2.5Mb on a Plus in both cases expandable to 4 meg, as I mentioned earlier. There is also MacMemory's CrashSaver built in to the board. If you have a RAM disk and there is a bomb it recovers everything intact. I set up a RAM disk with System, Finder, Printer Driver and Excel. I selected ShutDown the Mac re-booted and in about 2 seconds there was the Finder as I had left it!

Every program that I have tried so far runs perfectly. Except it runs significantly faster. I hear that on a 68020 there are some software that needs to be patched to run which is not surprising. On the TurboMax this is not a problem. I have the 68881 fitted and at the present 2 meg of RAM, Excel 1.03 and 1.04 (which I don't have yet) use this chip and the performance enhancement is astonishing. Scrolling, opening dialogs and other normal Mac events all happen with noticeable increase of speed.

Oh I forgot, there was one incompatibility. After I installed the TurboMax, it was near midnight and I was keen to see what happened. I was totally frustrated when on booting I lost the keyboard response. I tried everything I could think of but to no avail. So I called MacMemory, told them I have System 4.1. 'Got Easy Access', he asked - 'Yes', I replied. 'Well throw it away', he said. And that was the problem! Since then I am totally delighted with the enhanced performance.

Max2	£560 + £20 fitting.
MaxPort	£175
MaxChill	£49.
TurboMax	£1195

Available from you Dealer or

MacEurope Ltd.  
Crown House,  
Abbeydale Road,  
London NW10 7PN  
Tel: 01 965 6905

## Letters to the Editor

(continued)

Birmingham

Re: Working With VDU's

Having recently joined Apple2000 I thought I would write in to congratulate you on a splendid magazine. It is quite obvious that from the few issues I have collected the quality in terms of layout and content is constantly improving. I also thought that other subscribers would be interested to know about a booklet which has been produced by the Health and Safety Executive titled 'Working with V.D.U's'. The booklet answers the questions most commonly asked about VDU's and suggests simple adjustments that can be made to the workplace to make it more comfortable and easy to use. Copies of the booklet can be obtained from ...  
Baynards House  
Chepstow Place  
Westbourne Grove  
London W2 4TF  
Tel: 01-221 0416 (or 0870)  
.....or local area offices of the HSE.

Steve Needham

Cringleford - Norfolk

Dear Editor,  
Dougal Hendry's article on serial interfaces was one of the clearest on the subject I have read; I only wish it had been available a few years ago to help me round the many tedious hours I spent trying different ways of wiring up one instrument to another.

Readers may like to know that the Brother interface (mine is the IF100 add-on for a typewriter, but the HR series printers are the same) is a little unusual in making use of pin 8 of the RS-232 connector, the so called 'received line signal detector'. For satisfactory connection pins 4, 5, 6, and 8 at the printer end of the cable must all be connected together. In Dougal's terminology, the Brother is a T-type system, so that for a Macintosh the other connections should be as follows:

Brother DB25	Mac DB9 Plus DIN8
1	1
2	9
3	5
7	3
20	7

Richard A Y Jones

# Network News

## Coming products, troubles with ResEdit and a change in MacApp licensing fees.

### From Infomac

From: Paul Christensen  
Subject: **MacFair II & Macintosh II**  
Sorry I am late in posting this, but this has been a busy week for me. Nevertheless, I felt that this information was significant news for the Macintosh community. This report is by no means inclusive. Since it is based on my own notes and developer technical materials, I make no guarantee to the accuracy of the information presented here. The DUsers, Drexel University's Macintosh user group, in conjunction with Drexel University, Apple Computer, and the University of Pennsylvania MUG, held the second MacFair on the campus of Drexel University in Philadelphia, PA. This event was the most major Macintosh-related event on the entire east coast this year, and it was one of the first general public exhibitions to demonstrate the pre-release Macintosh II in its full glory (more on that later). Over thirty Macintosh hardware and software developers had booths at MacFair II: Apple Computer was showing off the Macintosh II with a SuperMac 19" color monitor (1024x768 resolution). This machine is much more than you've heard. You have to see it to believe it. The graphics processing in eight-bit color mode was competitive with the Digital VAXstation GPX. You can change the font of an entire 85-page document in Microsoft Word 3.0 from 10-point Geneva to 24-point NewYork in less than 5 seconds! Unfortunately, the MacII in the Apple booth did not have a sound chip installed (Apple has recalled it, again). SuperMac, sporting their Data-Frame 40/XP, was also showing their new line of 19" monochrome

and color monitors and display cards for the MacSE (only monochrome) and Macintosh II. Retail price for their 19" color monitor (1024x768) for the Macintosh II is \$3000, with their "Spectrum" video card (required) costing \$1500. The display quality of the Spectrum 19" color monitor was absolutely fantastic, rivalling the clarity of the standard Macintosh Plus 9" screen! SuperMac is also offering a video card (with socket for an optional 68881 math co-processor) for the Macintosh SE. This card will drive monochrome monitors up to 21" and 1024x1365 resolution. SuperMac was also giving out free updates of their DataFrame utilities (the new Initializer was version 2.5). Ashton Tate had a SlideShow demonstration of dBASE Mac, but no actual product. We were told that the product is too slow, and is being modified. According to their sales brochures, however, it should be a really nice product when released (if it's fast enough). Imagine the power of dBASE III or Omnis3, the intuitive relational capabilities of Reflex, and the layout capabilities of FileMaker Plus with a consistent, highly visual interface. Ann Arbor Softworks followed the vaporware tradition of Ashton-Tate by handing out colorful brochures on Full-Write Professional, but showing no product. This looks like the word processor that Word 3.0 should have been. It includes an outliner, glossary, 80000 word spelling checker, 40000 word thesaurus, automatic indexing and table of contents, kerning, leading, gutting, border lines, automatic text wrapping around irregularly shaped objects, multiple-column on-screen editing, and MUCH, MUCH more. Imagine search/replace by font, type size, justification, or just plain

text! It even has a built-in graphics editor with a MacDraw-like interface with tools for: pointer, text, lines (horizontal, vertical, or freehand), rectangles, rounded rectangles, ovals, and curves. It looks like the graphics editor is limited to creating screen-sized images, though. Microsoft said that the next version of Excel (1.04) will support the Apple Filing Protocol (defined by AppleShare), among other enhancements, and will be FREE to registered owners, but no release date was mentioned.

Other displays were less monumental. Borland International sold 300 copies of Mac TurboPascal for \$20. In addition to the developer floor, numerous lectures were given by guest speakers as notable as Ron Hochsprung (chief hardware engineer for the Macintosh II), John McEnerey (one of the developers of Lightspeed Pascal), and Michael Green (author of Zen and the Art of Macintosh), among others. Unfortunately, I only had enough time to listen to Ron Hochsprung's presentation:

Much of Mr. Hochsprung's speech centered around the technical implementation of the Macintosh II hardware and software. This information is covered in a 17-page product preview in the April 1987 issue of BYTE magazine. Please direct any questions/comments to: Paul Christensen  
CSNET: PCHRISTENSEN@RCA.COM [This report has been shortened. MacEditor.]

### From Delphi

From: PEABO  
Subject: **ResEdit is not your friend**

FLAME ON! I just got zapped by ResEdit in a particularly nasty fashion. After working on a new utility program for several weeks, I was all ready to send it out when I discovered that it crashed in its help dialogs when run on a 64K ROM machine. After spending several hours investigating, I found that 4 bytes of one of my StaticText items was being moved over top of the text handle of the TEREc that the Dialog Manager uses to draw in the window (how, I don't know) and that the text length field was negative (maybe sign extended from a one-byte value). This led me to take a close look at the DITL in hex, and note that my dialog contained a 243 byte item. Thumbing through IM reveals

continued on page 56



# SOME THOUGHTS ON THE SE

Alison Davies has some worries about the Hovercraft in her front room!

For the last eighteen months we have been using a Macintosh Plus at home and I might add that we have been very pleased with its ease of use, especially after using a BBC micro. Recently we fell victim to the advertising campaign for the SE and convinced ourselves that we really could make use of a hard drive; or could the reason be that the drawer we store the floppies in is full to bursting! On the other hand we did get fed up with the continual changing of floppies as we changed from application to application. The ease and speed of changing programmes now has made it all worth while.

Life however is not always a bed of roses and there have been two problems which have marred our enjoyment of the new SE. Firstly, like many home users we have our system set up in the living area which compared with an office environment is extremely quiet (particularly when the kids have

gone to bed!). The Mac Plus had no cooling fan and worked silently. However the SE is something different, and has a powerful fan keeping its interior cool. When switched on in a quiet environment it sounds something akin to a Hovercraft awaiting departure! Apple are aware of the problem and at present are evaluating a quieter fan at the factory in Ireland. Whether or not they will only fit it to new machines, or offer it as a replacement up-grade to existing machines remains to be seen. There is an alternative solution and that is to fit a resistor to the existing fan. Details of this are on the Apple Bulletin Board. Norah Arnold is endeavouring to obtain the information and as soon as it is available no doubt she will disclose all in the Magazine.

Secondly, we noticed that the screen focussing left a little to be desired down the left hand edge. The desk accessory menu to be

precise. We took it to our "friendly local dealer" for him to adjust as we were told that there was a focus adjustment inside. It was found that it was possible to bring the side of the screen into focus but when this was done the centre went out. In other words nothing could be done. The problem was mentioned to Apple, who after a fortnights investigation admitted that others had also complained of the same problem. Apple are shortly to bring out an upgrade to rectify this problem and we are given to believe that it should be available toward the end of July.

One final point worth mentioning before closing this article. Have you managed to lay your hands on the latest System Folder yet, it is dated April 14th, 1987. Be warned, it looks as if it's the U.S. version as dates are in the American format and the £ key appears as #. This can be overcome as long as you remember to press the Option key first. Also they are back to 'Trash' cans rather than the good old fashioned Wastebasket. Ah well nothing's perfect I suppose and that certainly goes for the computer world.



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Gluc	N/A	48.00			
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MacMoney	N/A	48.00			

# ZBASIC

## Paul Russell takes a look at ZBASIC for the Macintosh.

Those people who have progressed to the Macintosh from personal computers such as the Apple II will probably have been disappointed by the lack of a BASIC interpreter as a standard feature.

Until recently there has been only one remedy - the Microsoft BASIC interpreter. While this provides most of the features a BASIC programmer would expect from a BASIC interpreter on a conventional machine, it offers only minimal support for the Macintosh interface - menus, windows, dialogs, etc.

Ideally any language implementation for the Macintosh should enable the programmer to write applications which have the 'look and feel' of any other Mac application. To do this they must offer full support for the Mac Toolbox and Operating System. When one uses a 'real' Mac program one probably does not know or care what language it was written in and this should be the case with a good implementation of BASIC.

ZBASIC offers an alternative to the Microsoft BASIC interpreter. It is a compiler rather than an interpreter but is fast enough to be used as if it were an interpreter. It produces code which runs 'stand-alone' (you do not need BASIC to be able to run it) and runs much much faster than interpreted BASIC. In fact its execution speed is comparable to programs produced by 'proper' language implementations like Pascal or C.

ZBASIC is also available for the Apple II, MS-DOS and CP/M. This means that programs written for those machines can be fairly easily ported to the Macintosh, however the converse is not true, since most programs written for the Macintosh will use the Macintosh extensions to the language not found on other machines.

Preparing a BASIC program within ZBASIC involves using the ZBASIC editor. This is not a very good editor as text editors go (it

doesn't even have a Find or Replace command!), but is certainly a great improvement over the command line editor found in most ordinary BASICs. Compared to the built-in editors found in Lightspeed Pascal or C or even MS-BASIC (version 2.0 or later) it is rather lacking.

It is possible to use a separate text editor (QUED is my personal favourite) and this would probably be preferable when programs become too large for convenient editing within ZBASIC. However this method results in loss of interactivity since one must quit ZBASIC to edit the program and then quit the editor to compile/run/debug. (You could try using Switcher but be careful to close files within one application before opening them in another!)

ZBASIC compiles very quickly. It's hard to quantify compile speed but suffice to say that ZBASIC compiles so fast that you would be forgiven for thinking that it was an interpreter rather than a compiler.

The compiler seems a little buggy and will sometimes 'crash' half way through a compilation, usually because it has not been able to recover from a particular error. It's a good idea to save any work before running a ZBASIC program although I have not lost any files due to these intermittent crashes.

As is to be expected from a BASIC compiler, there is a large overhead in terms of code size when producing a stand-alone program. This is because of the large amount of code that must be bundled with an application for it to support all the ZBASIC built-in features. A simple 'Hello World' program compiles to around 38k bytes of application program! This is less significant when producing larger programs but is a nuisance if all you want to do is write a few small utilities.

Compiled programs can be run within the ZBASIC environment

(usually for debugging purposes) but more usually will be run as stand-alone programs. Certain run-time errors are caught by the run-time package but others are not - floating point divide by zero being one obvious error which I tried and which was not handled at all!

On the opposite page is a simple program which does very little, but demonstrates how easily a ZBASIC program can cope with standard Macintosh interfacing like menus and windows:

### Conclusion

At the time of writing this review ZBASIC was upgraded from version 3.02 to version 3.03. However Zedcor has just announced version 3.05 with a number of improvements and bug fixes. As you can probably gather, ZBASIC is a rapidly evolving product and any negative comments in this review should be balanced against this.

Other new products which should be considered when looking for a BASIC implementation for the Macintosh are the latest version of the Microsoft BASIC interpreter which has an optional add-on compiler and also a company called Pterodactyl Software is reported to be working on a PC-MacBasic product which offers compatibility between BASIC programs written on the IBM PC and the Macintosh.

ZBASIC retails for £85.00 in the UK, \$89.95 in the USA (some US discount stores are advertising ZBASIC for as little as \$59.00). This is considerably cheaper than Microsoft BASIC at £140.00.

The review copy of ZBASIC was kindly provided by:

**Tulip Enterprises Ltd**  
Studio 7, Intec 2  
Wade Road  
Basingstoke  
RG24 0NE  
(0256) 463754

**ZBASIC (version 3.02)**  
is available from  
**Shop2000 for £75.00**  
inclusive of VAT &  
Postage.

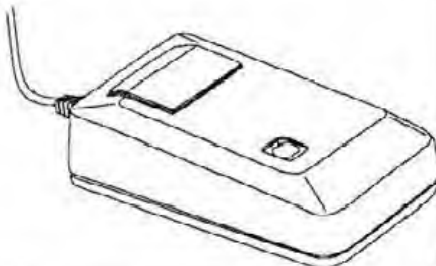


# ZBASIC DEMONSTRATION PROGRAM

```

REM
REM ZBASIC demo program by Paul Russell, April 1987
REM
REM
REM initialisation
REM
WINDOW OFF
COORDINATE WINDOW
WIDTH -2 REM disable line wrap
WINDOW 1,"Food window",(50,50)-(450,255),9
TEXT 4,9 REM Monaco 9
REM
REM set up menus
REM
APPLE MENU "About demo..."
MENU 1,0,1,"File" REM set up File menu
MENU 1,1,1,"Quit"
MENU 2,0,1,"Edit" REM set up Edit menu
MENU 2,1,1,"Undo"
MENU 2,3,1,"Cut/X"
MENU 2,4,1,"Copy/C"
MENU 2,5,1,"Paste/V"
MENU 2,6,1,"Clear"
MENU 3,0,1,"Special" REM set up the Special MENU
MENU 3,1,1,"Beans on toast/B"
MENU 3,2,1,"Cheese sandwich/H"
MENU 3,3,1,"Jacket potato/J"
ON MENU GOSUB "menuevent"
ON DIALOG GOSUB "dialogevent"
ON BREAK GOSUB "breakevent"
DIALOG ON:MENU ON:BREAK ON
REM
REM main event loop
REM
"loop"
GOTO "loop"
REM
REM event handling off for event handling subroutines...
REM
DIALOG OFF:MENU OFF:BREAK OFF
REM
REM dialog event handling
REM
"dialogevent"
RETURN
REM
REM menu event handling
REM
"menuevent"
whichmenu=MENU(0):whichitem=MENU(1)
IF whichmenu=255 THEN GOSUB "applmenu" ELSE ON whichmenu GOSUB
"filemenu","editmenu","specialmenu"
MENU
RETURN
END
"applmenu"
IF whichitem=1 THEN GOSUB "about"
RETURN
"about"
BEEP
RETURN
"filemenu"
IF whichitem=1 THEN "breakevent"
RETURN
"editmenu"
BEEP
RETURN
"specialmenu"
ON whichitem GOSUB "beans","sandwich","potato"
RETURN
"beans"
PRINT "Baked beans on toast - 200 calories"
RETURN
"sandwich"
PRINT "Cheese sandwich - 250 calories"
RETURN
"potato"
PRINT "Jacket potato - 300 calories"
RETURN
"breakevent"
PRINT "Bye..."
END

```



## MacTel News.

A message has been received from David Nicholson Cole to say that Clipboard is on the way.

Yes - for all those that thought they were no longer subscribers or that the database had been lost - IT IS ON THE WAY.

The problem appears to be that the Editor had to give the job up at short notice and the work was left to others who already are at full stretch. Happily David has been able to put it together and it is at the printers. We on the Apple2000 rag know what it takes to put it all together - BLOOD - SWEAT - AND LOTS OF TEARS !

Lets hope that the problems with CLIPBOARD can be sorted out once and for all.

Remember that the MacSEPTEMBER event is not that far away and if you want to enjoy the atmosphere of a crowd of Mac enthusiasts and learn something, you had better rush to sign up! I hear that places are going fast.

MacTel is still the place to be if you want to hear the latest news and download the latest PD software. If you haven't tried it yet get a modem and really LIVE.

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# Network News

continued from page 52

that the maximum length text item in a DITL is 240. Evidently this limitation doesn't apply on the 128K ROMs.

My flame is "why can't I depend on ResEdit to keep me out of trouble?" Note that I was not editing the DITL in hex, I was using the Mac-ish interface and I didn't know how big the string was (it's not that easy to find out either - you have to know how to parse the DITL in hex).

Most compilers diagnose syntax errors. They usually don't compile machine instructions with unknown addressing modes. Can't ResEdit enforce the laws of Macintosh physics? FLAME OFF!

Seriously, if this were the only thing wrong with ResEdit I wouldn't mind so much. A bug is a bug, after all. The limitation of 240 characters is obscure, and by and large it is worth the convenience of editing in a natural fashion to put up with occasional problems.

But this isn't the only thing wrong with ResEdit. Just to name a few things:

(1) Unnecessarily difficult method of putting DITL items in any particular order (and you nearly always want to put them in a particular order).

(2) No way to locate an item off the visible part of the window. You have to edit in hex. Very carefully.

(3) No sanity check on boundary boxes. Type in the wrong digit on the right hand margin and poof! Back to hex mode to find the BBox and make it well-formed again.

(4) No way to select an item by its number. This would solve (2) and (3) if it existed and also would make it possible to create the user items that are used to refresh the outline around a button in a standard file dialog (BBox = (0,0,0,0)).

(5) Infuriating inconsistency in what double-click means when applied to a displayed dialog item.

Sometimes it means open the item for non-graphic editing, and sometimes it means open the associated resource.

(6) Strange results if you mistakenly open an item twice because you covered the window from the first time you opened it. That window is still there, waiting to be closed and undo your careful adjustments.

(7) Menu editor is numbingly slow. It's too brain damaged to adjust the mask of enabled menu items for

you. You have to figure out the mask in hex and type it in.

(8) Font editor - never mind. Buy Fontastic: the Font Editor in ResEdit is an obscure practical joke.

This list could go on and on, but the picture is clear: ResEdit isn't what it could be, and certainly not what most of us imagined it would be back in the bad old days when it was coming Real Soon Now. I'll bet some enterprising Mac hacker could produce a real Resource Editor that would blow it completely out of the water.

Peter

From: BRECHER

Subject: RE: **ResEdit is not your friend**

The menu editor can be changed from numbingly slow to pleasingly fast by replacing the 8 BBITS in the TMPL with a HBYT. One hardly ever alters the style of a menu item, so not much is lost in going from 8 radio buttons to a hex byte. (This idea due to Scott Knaster.)

From: R MUHA

Subject: RE: **ResEdit is not your friend**

Right on! Didn't earlier versions of ResEdit have someone's name and address at Apple (in the about box) requesting comments and complaints? If so, you ought to send them a copy of your screed. It sums up the problem quite eloquently. You might add the fact that DITLs with large numbers of items are exceptionally error prone. When doing MIDIScope, ResEdit just loved to crash whenever I was changing the main window DITL (almost 50 items).

I learned to save the file after each change, which is a pain since you have to close it and then re-open it; there is no save command in the file menu.

From: JEFFS

Subject: **ADB Optical Mice**

I just found out the Mouse Systems (makers of the A+ Mouse) are developing optical mice for the Apple Desktop Bus (IIgs, Mac SE, Mac II.) The single button mouse is currently in the prototype stage. The real interesting part is that they plan on developing a \*3\* button mouse as well! This will be mainly for A/UX but will have interesting ramifications with Mac software. They are currently working with Apple on this. They hope to have this one out by the end of the year, no prototypes exist yet.

Jeff

From: DDUNHAM

Subject: **Downloadable fonts, Altsys**

It turned out my problem with Laser Prep 4.0 and one downloadable font was cured by regenerating the bitmap for the font; apparently the FOND was invalid.

Doing the regeneration was a bit of a problem, however. All of Altsys's font programs are written in Megamax C, and there's apparently a bug in Megamax where it uses low memory globals.

System 4.1 also uses these globals, so I could only run Fontographer on a System 3.2 machine.

David.

## From Usenet

From: dgold@apple.UUCP

Subject: **MacApp Licensing Agreement**

In response to requests from our users (including those in this forum, among others), we have altered the MacApp Licensing Agreement.

There are now two levels of support with two different licensing fees.

For developers who are distributing one or more applications for profit (that is, with intention to profit), the fee continues to be \$100/year for an unlimited number of MacApp applications, as before.

This fee entitles the developer to any updates to MacApp which come out during the year for which the fee was paid.

For developers who are not distributing ANY applications for profit (that is, all the applications being distributed are not intended to profit the developer), the fee is now \$10/year, again for an unlimited number of (non-profit) applications.

This fee does not include any updates to MacApp. This type of license may be upgraded to the commercial variety at any time.

This new license agreement will be included in the MacApp 1.1 update which will be available from APDA. David Goldsmith, Apple Computer, Inc. MacApp Group.

Info-Mac digests consist of submissions by individuals on the academic computer networks. Submission and distribution of these digests is by network, moderated by volunteers at Stanford University.

Usenet is a loosely-coupled network of co-operating academic and commercial computer systems. It is a non-profit network whose primary aim is the sharing of technical information and the spreading of research results.

Delphi is a commercial time-sharing and bulletin board system. The Delphi Digests are made available thanks to Jeffrey Shulman of Rutgers University.



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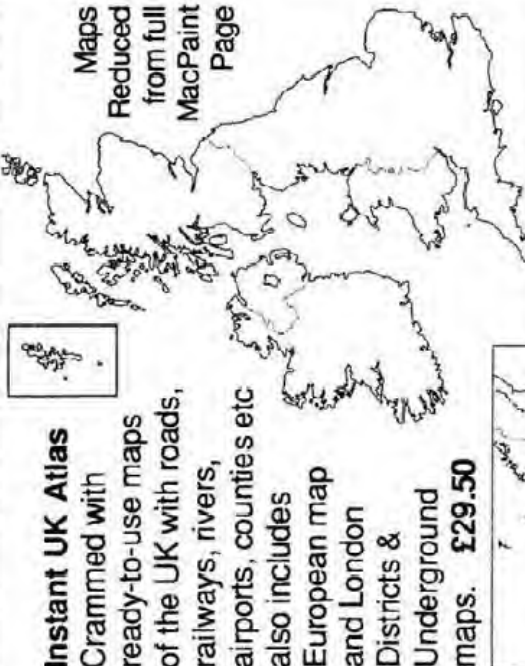
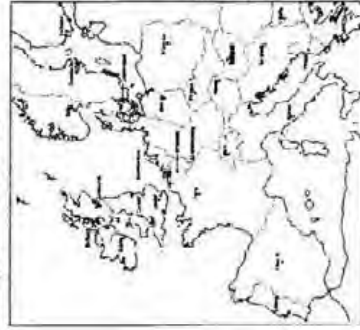
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# MSC/PAL

## MSC/PAL INTRO v1.6 reviewed by John Arnold a finite element analysis program for the Macintosh.

### Short background to the Finite Element method.

Finite Element analysis was developed mainly for the aircraft industry in the 1950's, and has subsequently been used in many different branches of engineering including mechanical, structural, civil, electrical, naval, nuclear and others, and has become an indispensable tool for the analysis of a variety of structures.

To apply the method to a physical structure, the first step is to "assemble" the structure from standard basic structures (or elements) by breaking the structure down into a number of basic elements connecting chosen nodes, in other words to consider the structure as a discrete system. Next the loadings to be applied and the restraints required for the boundary conditions have to be specified (the input phase), the equations formed and solved to give the deflections at the node points, stresses in the elements etc (the solution phase).

The last of these steps (which is of course the major part of the method) is performed by the program. The input phase however, has to be performed by the user, and this is where experience with structural analysis helps, particularly in the case of continuous structures, as the selection of suitable node locations and representative elements is vital if a representative model is to be obtained.

We are replacing an actual structure with a model which represents the actual structure and obviously the better the starting model, the more accurate the calculated results will be.

Mathematically the equations involved are elliptical partial differential equations, and by using the

finite element method these equations become a set of linear equations which can be solved using matrix methods. The calculated solution is an approximation to the true solution of the original theoretical equations. Generally the greater the number of nodes used for the structure approximation the more accurate the solution will be. This however, increases the time taken for the solution to be found, and can also present problems in handling the very large matrices involved.

### MSC/PAL

The product is produced by MacNeal-Schwendler Corporation and is available in three different versions:-

- MSC/PAL INTRO which is intended as a demonstration version as well as a working version suitable for students, this is the version being reviewed here. It has been restricted so that it can only handle models of no more than 25 nodes.

- MSC/PAL 512K version accepts up to 300 node points.

- MSC/PAL 1 megabyte version accepts up to 500 node points.

It is worth noting that MSC produce the well known NASTRAN finite element program which is probably the most used finite element package world wide, and is available for a range of computers.

The MSC/PAL INTRO program allows for the following analyses to be performed on two and three dimensional structural systems:- displacements, stresses, static, normal modes, transient response, and frequency response.

The package consists of a manual and two 400k disks, one being the program disk, and the other a disk of examples.

The manual gives details for in-

stallation on various combinations of disk drives, and hard disks, the disks are not protected and so it is possible to take selected files so that you get a usable arrangement, the problem being the large size of the scratch files generated by the program and saved to disk as it is running, the INTRO version does not allow the scratch files to be saved on a disk other than the program disk.

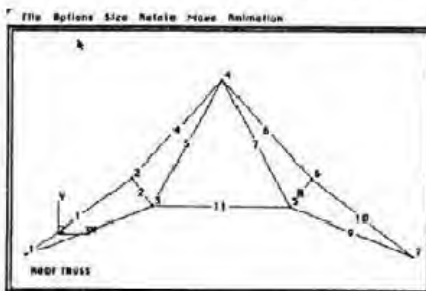
The 350 page manual has 5 sections :-

1. Getting started:- a list of the menu choices, and a flow diagram giving the order of solution, and installation details.
2. Example problems:- this section is a tutorial giving all the examples provided on the examples disk with details of the types of analysis that can be performed on the various examples. The examples start with a two point cantilever (ex.1) and conclude with a spherical structure (ex. 15) and include among other things, a two story building, an earthquake analysis, and the transient response of a rocket. All the examples except the spherical structure can be used with the INTRO version.
3. Model definition commands
4. Solution definition commands
5. Appendices

The examples provided give a good introduction to the various types of structural problem that can be solved using the program. A new user would be well advised to work through the majority, and to list the various files needed for each problem, some of which are listed in the manual. Since the problems have deliberately been kept small so as to be usable with the INTRO version, it is not possible to form any realistic conclusion about the running time needed to solve problems involving a large number of nodes.

On booting the program the main menu screen with the MSC copyright notice is obtained, the menu options being:- **File, Model, Statics, Dynamics, Graphics**

The sequence of operations required to obtain a solution of a structural problem is as follows:-





**File-->Create text file** to enter the editor section where the details, i.e. the coordinates of the node points, the material properties and the type of elements and the node connections, have to be specified. This text file is then saved as ----.MDL.

**File-->Create text file** again to create the loading file which contains details any applied displacements and applied loadings at nodes. Saved as ----.ST.

**Model-->Build Model** enter the name of the .MDL file, the equations are then built from the file information, the screen finally showing the number of nodes, number of equations, number of eliminated components, the % of available memory, and the solution types available for that particular model. The model can then be viewed with: **Graphics-->View** with option to Get current model or Read model text file.

The main menu bar changes to give: **File, Options, Size, Rotate, Move, Animation**

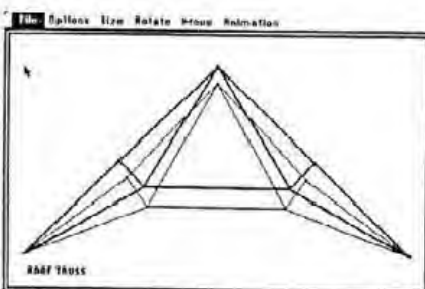
Before the model is plotted the plane of viewing must be chosen. The menu options then become applicable

**Options-->Change title, Node numbers, Element numbers, XYZ axes**

**Size-->Size picture, Size solution**  
**Rotate-->Horizontal axis, Vertical axis, Normal axis**

**Move-->Move vertical, Move horizontal, Move to centre**

Hence the scale, position and labelling of the drawing can be chosen.



Having gone through all this if you want to get hard copy of the view of the model you will have to use cmd/shift 4, as no print screen option appears in any of the available menu options.

**File-->Main menu** gets us back to the copyright screen.

We can then choose:-

**Statics-->Static solution** choose which type of calculation is to be performed and where the output is to be directed to (i.e. screen, printer, or disk), enter the name of the solution file. This is confusing be-

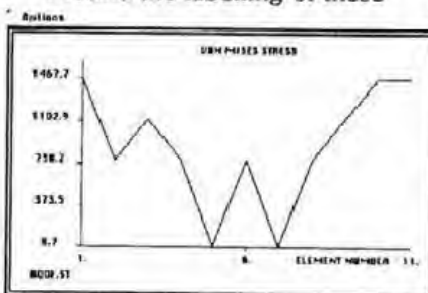
cause what is actually required is the name of the file containing the loading i.e. the ----.ST file; the static displacement components and the external force components are then printed. Press continue with the stated available options to view displacements or to plot stresses.

The **Graphics-->View** option then allows the display of either the deformed model only, or the deformed model with the undeformed model overlain.

A very nice feature is the **Animation** option which displays in animation the structure moving between  $\pm$ max deflection, the displacements are of course exaggerated, but can if required be rescaled using the **Size** option.

The alternative **Graphics-->Plot** option gives the stress/element no. graph, the first being the Von Mises stress, the **Option-->Next plot** allows the user to cycle through the other available plots:- shear stress, major stress, and minor stress.

I found the labelling of these



graphs untidy. The vertical scale ending up with some rather odd numbers as the values are based upon the maximum and minimum values obtained in the calculations. The horizontal scale gives only three values (the element numbers) and I force some difficulty in reading off values in large models.

Section 3 of the manual gives the model definition commands to be used in the .MDL file. The commands can be used in full to give a readable text file, useful for documentation, or two or three letter equivalents can be used.

The dynamic analyses require their own files giving the loading conditions for use in the Normal Modes, Frequency Response and Transient Response analysis. For example the Transient response file can include the accelerations from the digitised record of a specific earthquake, so that an earthquake analysis of a structure can be performed. The Normal mode analysis allows the various modes to be viewed, again this would be particularly useful in a teaching environment.

The Element library provided contains:-

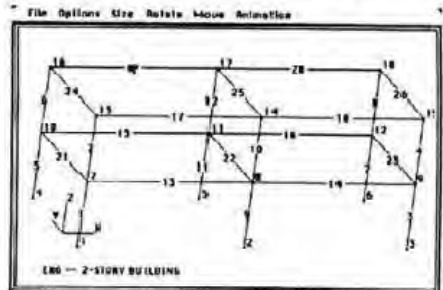
Three types of BEAM

BEAM TYPE 1 a constant cross section beam.

BEAM TYPE 2 a variable cross section rectangular beam.

BEAM TYPE 3 a circular tube beam.

DAMPER a single axis damper.



DAMPING ELEMENT a three dimensional viscous damping element.  
K MATRIX a 6X6 generalised stiffness matrix connecting two node points.

LINK ELEMENT for specifying the bushing stiffness for a link. This can be considered to be a rigid link with 6 springs connecting each end of the link to the attachment node point.

M MATRIX a 6X6 generalised mass matrix at a node point.

QUADRILATERAL PLATE TYPE a combination of the MEMQ and LORA plate elements.

SPRING a single axis spring.

TRIANGULAR PLATE TYPE this is the Discrete Kirchhoff triangle.

Other words available in the model definition section include:-

ACTIVATE, ANALYZE, ANGULAR ORIENTATION, ATTACH AT, AUTO, CONNECT, DIRECTION ANGLES, ELIMINATE, LOCAL COORDINATE ANGLES, MATERIAL PROPERTIES, NODAL POINT LOCATIONS, OFFSET CONNECTION, RELEASE, VECTOR ORIENTATION, and ZERO.

The available commands enable the node coordinates to be entered in rectangular, polar, cylindrical and spherical coordinates.

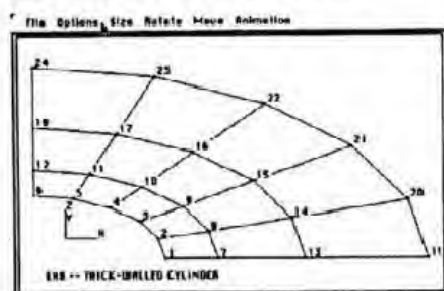
Section 4 details the solution definition commands available, these include :- ACCELERATIONS APPLIED, DISPLACEMENTS APPLIED, FORCES AND MOMENTS APPLIED, GRAVITY APPLIED, and PRESSURE LOAD APPLIED.

Also given in this section are the Dynamic analysis commands.

The appendices give the background of the Finite Element method (necessarily short as there are a number of standard texts available for anyone wishing to get additional information), with details relevant to the basic elements provided in the library, suggestions for getting the

best out of MSC/PAL, details of the maximum problem size that can be handled with the various versions, and an index.

I found entering the coordinates of the nodes in the appropriate text file can be eased by using MAC3D, drawing the structure with the polygon tool, then using the Export file option to get the coordinates of the nodes into a file. The file has to be saved with a .txt extension so that the editor can accept it. The details can then be edited, although a number of features we have come to expect in an editor have not been implemented in MSC/PAL, for example selection of text is not standard, when text is selected



hitting the backspace key doesn't delete the selected text, no key equivalents for the editing functions that are available. It also seems that text files written in MACWRITE cannot be read by MSC/PAL.

I found looking at the package as a whole, that the structural, and mathematical parts appear to be quite good, if anything is to be criticised it has to be the Macintosh interface as used by the program. I list some aspects that hopefully will be addressed in future versions:-

1. No Apple Menu, hence cannot support Desk Accessories
2. The Standard file dialog box does not appear, the lack of this facility makes file finding difficult. I had to resort to a screen dump of the catalog for the student disc, which contains a considerable number of files, certainly more than I could remember the names for.
3. When printing there is no opportunity to select the page size, and as I use A4 size paper, this is a difficulty.
4. No tick mark for menu options which toggle.
5. Clipboard and Scrapbook not supported in the Editor.
6. Selection in Editor works in a non-standard way, i.e. pressbutton down, drag, and release button, text is only highlighted when the button is released.
7. No scroll bars in editor, only page up or down options.

8. Error indication :- a disk with insufficient space gave me an error code of 38, not 34 as in the manual. The manual gives no other error codes, perhaps nothing else is expected to go wrong! To be fair however there is a mention of Fortran error codes, but as I for one do not have Fortran or its manual to refer to, a listing of error codes in the MSC/PAL manual would be welcome.

9. Manual :- spelling of the chapter heading on pages A-2-3, to A-2-35 should of course be EFFECTIVE.

#### Some good features are:-

- the animation mode, this option makes the package a very attractive one for use in teaching establishments.
- the manual is very complete and gives a brief introduction to the background and theory of Finite Element analysis.
- units can be English or Metric, it is up to the user to be consistent, although for the packages sold in England it might be advisable to provide the examples in metric units, which are now standard in Engineering faculties.

I found the lack of the Macintosh file dialog box annoying when successively entering and modifying text, having to repeatedly type in the name of the text file each time you need to save shouldn't be necessary.

Mistakes in the files which stop the program from solving the model are indicated on the screen, although I wasn't always sure what the error message was trying to tell me. The basic structural elements written into the program are probably sufficient, there are however some standard elements not available. For example the 8 node quadrilateral, and the 20 node brick.

#### Conclusions

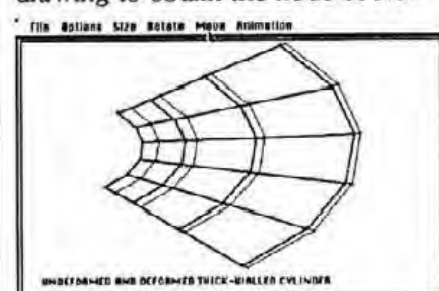
The package reviewed was a restricted version, however the full manual was provided and most of the commands were usable from the INTRO version.

I found the program to be a mixture of both good and poor features, some of which have already been given above. For an engineer with a requirement for a finite element approach to the solution of structural problems, then the package is well worth looking at. Almost certainly it will take some time to get used to, this however being a consequence of the method itself rather than any fault with the program. Engineering courses

containing modules involving Finite Elements would, I am sure find the program particularly valuable.

Although I thoroughly enjoyed using the program, I found myself being irritated by the poor Macintosh interface implementation. It seems obvious that the program has been ported from another machine, and surely not too much extra programming would have been necessary to implement the standard file dialog box, the necessary improvements to the editor etc, and is the copyright notice really needed every time you return to the main menu screen?

I would like to see some way of drawing the structure and using the drawing to obtain the node coordi-



nates, in other words to have some automation in the formation of the model file, as part of the package. Also needed is the ability to plot the stress contours with plotter output.

For anyone considering purchasing the package I would try to get confirmation that at least some of these aspects will be dealt with in an upgrade before spending \$1495 for the megabyte version

Finally a point mentioned by some of my engineering colleagues:- in England the initials MSC refer usually to the Manpower Service Commission, who are associated with courses generally of a low academic standing. It is unfortunate that a package which requires a high level of knowledge before it could be sensibly used, uses the same initials for its name, perhaps more emphasis on Finite Elements on the cover of the manual and disks would be appropriate for the English version.

Thanks to Steve Ackhurst for valuable comments made while making a trial run of the program. 🍏

**MSC/PAL Mac Demo - \$45**  
**MSC/PAL Mac 512K - \$995**  
**MSC/PAL Mac Plus - \$1495**  
 More information can be obtained from

**The MacNeal-Schwendler Company Limited**  
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**DrawArt Volume 2** is a disk of MacDraw files published in 1986 by Desktop Graphics. Any registered purchaser has the right to modify and incorporate DrawArt objects into other documents.

The decision to do the pictures as Draw files rather than as bitmapped MacPaint images can be seen to have some advantages and some disadvantages. The most obvious advantage is that LaserWriter owners are able to incorporate the pictures into, for instance, Page-Maker documents, in PICT format so taking full advantage of the LaserWriter's 300 dots per inch.

The greatest disadvantage is that one is forced to spend some time using MacDraw, a program that appears to promise so much while at the same time being irritatingly slow when moving around the desktop and quite restrictive in what it will allow you to do without getting into difficulties. After all, it was written quite a while ago.

The liveliest picture of the lot, it seemed to me, was the chap with the giant pool ball on the Intro file, although I am sure that some of the others are most acceptable for incorporating into publications.

The files provided can also be used by registered owners as a springboard of ideas from which to build up their own customised set of Draw files for use in their own publications.

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# DrawArt™

Norah Arnold reviews Volume 2 of DrawArt™ - a package of clip-art MacDraw files by Desktop Graphics.



# ADOBE ILLUSTRATOR

*Reviewed by Irene Flaxman*

I prepared an interim report on the Adobe Illustrator for the last issue. This was somewhat superficial, as I received the software only shortly before going to press - so I did promise to prepare a more thorough report for this issue.

The sample artwork that Adobe have published is certainly impressive, but what can an amateur do? That was what I set out to find, and I'm pretty impressed.

The package comes complete with a video which demonstrates the usage of the program - I thought this an excellent idea, as it gives basic guidance on using a program which is somewhat different from the typical MacPaint-like packages. The tutorial has also been well-designed, including the supplied templates which are designed to give you practice in the various techniques you will need to create your own artwork. An on-line Help facility, and a quick-reference card are also provided to assist you, should you need them.

One of the main differences between Illustrator and other artwork packages is the ability to take an existing MacPaint picture file and use this as a 'template' to form the basis of your 'artwork' - useful, if you are not a proficient artist. To facilitate your work, you may choose to view your graphics in a variety of ways: template only, artwork only, template and artwork, or preview. Viewing the artwork shows only the lines you have drawn to define the outline of your image (the 'path'), but preview presents the image as it will be printed - complete with line-widths and shadings. As Illustrator will allow several windows to be open simultaneously (including a split-screen facility to view more than one window), and will even cope with several copies of the same window, you can have the preview image on screen at the same time as the artwork - any changes made to the artwork will automatically be echoed on the preview screen, so

this is a really useful facility.

Recently, I was asked "What is the advantage of using Illustrator if you already have an image in MacPaint format?" The point is that, having traced around the template, the finished artwork is saved as PostScript and the printed output is of a much superior quality than that of the MacPaint original. I should also clear another point of confusion by stating that it is not essential that you use a template as the basis of your artwork - you can create your own original graphics, starting with a blank screen if you wish.

Lines are drawn by clicking at each end (i.e. identifying the 'anchor points'), and can be constrained to angles of multiples of 45° by using the shift key. Curves are drawn by clicking to form an 'anchor point' then dragging to form a 'direction point' - again, define these for each end to create the curve you desire. Continue in this way until you have outlined the 'path' you want to describe - this path may be open or closed, and you can then 'stroke' the path with any width of line in any shade, and you can 'fill' a closed path with any shade of grey. In this way, you gradually build up your artwork to create the image you require.

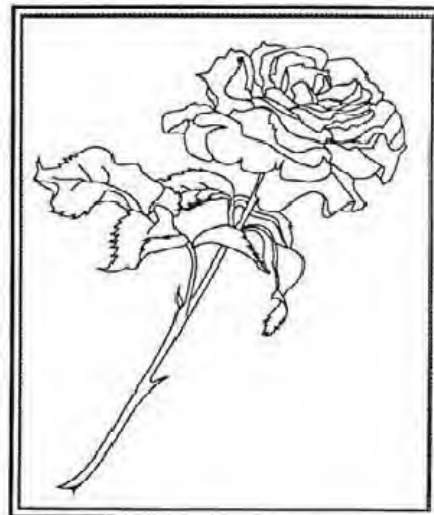
It is not essential to be absolutely precise in your first attempts at drawing your outline graphics. If you find that you are not happy with the 'finished' result, it is a simple matter to change the path. Additional points can be inserted, if necessary, and both anchor points and direction points can easily be moved. Separate segments can be joined to create a single path, and the image can be magnified to 1600% if necessary, to perfect the finer details - this is another point where the multiple windows are useful, as you can work at a very detailed level whilst retaining an overview of the full image.

Those who are familiar with Postscript programming will

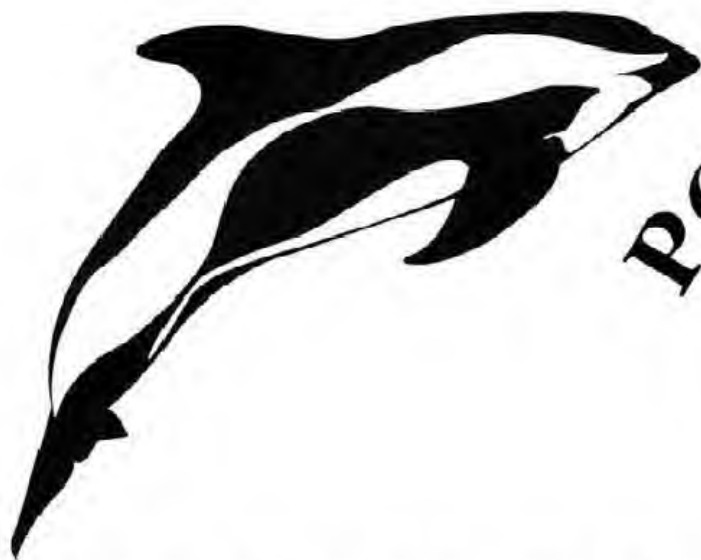
recognize the terminology used above. This is a program built around Postscript facilities, indeed the options available when you save your artwork are all Postscript-related - Postscript format is the 'norm', which creates a text file that can be edited by any word-processing program, should you wish; Encapsulated Postscript (for either the Macintosh or the IBM) will allow you to open the file with any application which recognizes the PICT format - useful for placing graphics in a program such as PageMaker. Cut and paste facilities are available as with other Mac programs, and this can be used to transport pictures into other applications. They are copied in the preview state, so produce a very good finish.

Illustrator is a program for creating line-art drawings, not for full half-tones, but a 3-D impression can be created by clever use of the grey tones. To create this type of effect, draw several shapes (each progressively smaller than the previous), fill them with varying shades of grey - the smaller the shape, the lighter the tone - then overlay the smaller on top of the larger, to build up a shaded image which can look really effective. It does take practice, though! I've seen the samples, but I've not yet achieved it. A useful inclusion in the manual is a chart which shows how the different percentages of grey will be printed on screen, on a LaserWriter, and on a Lintotronic.

The program includes many tools to assist in the drawing process, some being familiar from other programs, others being somewhat innovative. I have to admit that I still find the rulers confusing - these are drawn along the right-hand and bottom edges of the screen, and the units of measure are points or picas, depending on the zoom size. I think







# POSTSCRIPT DESIGN TOOL

my confusion is caused because the scales change dependant on the zoom size - although I can understand why this is necessary, when there are nine levels of magnification it would be difficult to find a consistent scale which would be usable at all levels.

The toolbox includes the familiar tools for drawing ellipses and rectangles, with the ability to constrain to circles and squares. In addition, these shapes may be drawn from the centre - indeed, the centre is always marked, so that the alignment of concentric circles (for example) is made very simple. Other tools which are easily recognized are the Selection, Hand, Text and Zoom tools.

Some tools are not familiar - the *Open* is the basic drawing tool, for creating the outline or path that describes your finished line-art. The *Scissors* tool is used for inserting a new anchor point in an existing path. The *Page* tool allows you to specify how the Illustrator's 14" x 14" work-space is to be tiled into pages. Finally, there are four 'transforming' tools, which need a little more explanation.

The four allow you to Scale, Rotate, Reflect and Shear the selected image or text. All work on a similar principle - first, select the object to be transformed, then select the transformation tool, click on an anchor point (called 'the origin', this is a static point around which the transformation will take place), and (finally) click and drag to transform the object. For finer tuning of the transformation, the starting-point for the drag should be further from the origin. An alternative to dragging the image to achieve the transformation, is to use a transformation dialogue box - this will allow you to input the appropriate values (in terms of the

x- and y-axes) to give a fine level of precision. As you can also rotate the axes, and you can automatically repeat the same transformation any number of times, the variety of transforming options is endless. If you do not like your transformation, don't worry - as with all other functions of the program, there is an 'undo' option. Scaling, rotating and reflecting were titles that I found familiar, but shearing had me a little puzzled - this is the tool which is used to skew the image at an angle, again this can be done by dragging or by inserting values in the dialogue box.

Duplicating objects, grouping and ungrouping objects, changing the painting order of objects (important, if you are building up an image in layers, which will usually be the case) - all are familiar to the Mac user, and they are included in Illustrator. Although it takes a little courage, the first time you 'cut' an object so you can 'paste in front' or 'paste in back'!

Text can be added by selecting the *Type* tool. You control the normal type attributes, such as font, size, leading, kerning, alignment. Having typed in your text, Illustrator will treat it as an object - just like any other. So, you can use any of the transformation tools, duplicate, move, or change the paint attributes (e.g. linewidth, stroke and fill patterns). Circular text sounds quite a complex operation as described in the manual, but we found it very simple using the rotation tool then duplicating the rotation.

Whenever you select the paint attributes, e.g. to set the fill pattern or line width, there is an option to add a note. At first sight, this seems a strange facility to include in a drawing program. However, it can be used to enter a note related to

the particular object you are working with. When you save your drawing as a Postscript file, this can be read by a standard word-processing package, and the notes will be included in the Postscript code so that you can more easily identify which coding relates to which object within your drawing. Anyone who has done any programming will be well aware how useful notes can be - particularly when the coding has been written by someone else (or something else, as in this case!).

I found the basic program features easy to master, although I still need to experiment with the more advanced features, such as building up a '3-D' impression, and I still have to think hard as to whether I need to use the 'shift' key, the 'option' key, or both when manipulating objects.

I am not graphically talented (I wish very much that I were so talented!). I worked conscientiously through the tutorial in the manual, completing all the supplied examples as I went. I then tried my first 'solo' picture. After about an hour, I produced the dolphin that you see in the title-bar above, following a template that was created by scanning a postcard. I'm pretty pleased with it, but without the template I'm afraid that I should not have been able to reproduce the image.

I find the program fun to use, and it gives me a great deal of satisfaction to be able to create a picture like that - even if I am cheating by tracing it!

**Adobe Illustrator™ v1.0  
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and is distributed by McQueen,  
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## Changing colour !

For once the Apple world has calmed down. Nothing exciting has happened for at least two months. Whats wrong!

Has someone slipped up?

I dont think I have ever recalled such a dull season of Apple rumours or gossip. Do you think it could be that Apple is turning a shade blue? It was cream then platinum and now it's unofficially going off white. Without us noticing the Appleworld around us is evolving into a different beast to what we first encountered in the good ole days. Gone are the local and sometimes friendly dealers, and gone are the sales of second hand kit floating around the shops. In comes the new tack. In come the Apple Centres.

Like symbols of corporate franchise they are descending into the high streets, bypassing the window gazer and targetting the corporate leaders. The old personality Apple characters have been buried for good, replaced by robotic salespersons demonstrating the wonders of desktop publishing and almost networking software. All for good reason I hasten to add. For without new images and new markets Apple would perish and we would be without the new excellent machines.

The enthusiasm of the early machines has waned as the market leaders in hardware and software have established themselves into brand names. "Not another word processor" I heard groaned at my last local group meet. Okay it was an old beta of Habaword, which came, rallied and went and then re-appeared before disappearing. But still it had some great features implemented and the it blew the socks off MacWrite.

Why the apathy? Well for a start the computer industry is full of it, and second The trouble is that we have become spoilt with good, easy to use software and there does not seem to be an end to it. No sooner have we just become proficient at our new purchase than a new bigger and better one arrives. A long series of complex procedures to perform a single function, learnt over hours of trial and error are made redundant with a single mouseclick on the all new singing and dancing, recently released software. It just so happens that it is the not the same package which you have just forked out for. AAAAAAAAAAAAAAAAAHHHH!!

What is the solution then? Buy a MAC II because just about no Mac software runs on it and it is the latest high tech machine, still to be released in numbers. So you think that is the last of it. Well I have news for you, the Mac III.

AAAAAAAAAAAAAAAAHHHH!!!



## APOLOGIES

On page 43 of the June 1987 issue a review article on the Program Writer by Dave Ward contained errors caused during setting of the article.

This software was wrongly accredited as a Beagle Brothers product, in fact this should have been accredited to The Software Touch.

We apologise to both Beagle Brothers and The Software Touch for this mistake .

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February 1987

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- 2 WriteNow
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- 5 Lightspeed Pascal
- 6 Lightspeed C
- 7 TML Pascal
- 8 More
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- 10 Silicon Press

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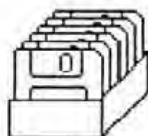
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